MOVI
URBA
AMERI

MOVI
URBA
AMERI

Chairman: A. RAY CHAMBERLAIN, Executive Director, Colorado Department of Transportation, Denver
Vice Chairman: JOSEPH M. SUSSMAN, JR East Professor of Engineering, Massachusetts Institute of Technology, Cambridge
Executive Director: THOMAS B. DEEN, Transportation Research Board

MIKE ACOTT, President, National Asphalt Pavement Association, Lanham, Maryland (ex officio)
ROY A. ALLEN, Vice President, Research and Test Department, Association of American Railroads, Washington, D.C. (ex officio)
RICHARD E. BOWMAN, Acting Administrator, Maritime Administration, U.S. Department of Transportation (ex officio)
E. DEAN CARLSON, Executive Director, Federal Highway Administration, U.S. Department of Transportation (ex officio)
JOSEPH M. DELBALZO, Acting Administrator, Federal Aviation Administration, U.S. Department of Transportation (ex officio)
FRANCIS B. FRANCOIS, Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (ex officio)
JACK R. GILSTRAP, Executive Vice President, American Public Transit Association, Washington, D.C. (ex officio)
THOMAS H. HANNA, President and CEO, American Automobile Manufacturers Association, Detroit, Michigan (ex officio)
S. MARK LINDSEY, Acting Administrator, Federal Railroad Administration, U.S. Department of Transportation (ex officio)
ROBERT H. McMANUS, Acting Administrator, Federal Transit Administration, U.S. Department of Transportation (ex officio)
ROSE A. McMURRAY, Acting Administrator, Research and Special Programs Administration, U.S. Department of Transportation (ex officio)
HOWARD M. SMOLKIN, Acting Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)
LT. GEN. ARTHUR E. WILLIAMS, Chief of Engineers and Commander, U.S. Army Corps of Engineers, Washington, D.C. (ex officio)

KIRK BROWN, Secretary, Illinois Department of Transportation, Springfield
DAVID BURWELL, President, Rails-to-Trails Conservancy, Washington, D.C.
L. G. (GARY) BYRD, Consultant, Alexandria, Virginia
L. STANLEY CRANE, former Chairman and CEO of Consolidated Rail Corporation, Gladwyne, Pennsylvania
RICHARD K. DAVIDSON, Chairman and CEO, Union Pacific Railroad, Omaha, Nebraska
JAMES C. DeLONG, Director of Aviation, Philadelphia International Airport, Pennsylvania
JERRY L. DePOY, Vice President, Properties and Facilities, USAir, Arlington, Virginia
ROBERT KOCHANOWSKI, Executive Director, Southwestern Pennsylvania Regional Planning Commission, Pittsburgh
LESTER P. LAMM, President, Highway Users Federation, Washington, D.C.
LILLIAN C. LIBURDI, Director, Port Department, The Port Authority of New York and New Jersey, New York City
ADOLF D. MAY, JR., Professor and Vice Chair, Institute of Transportation Studies, University of California, Berkeley
WILLIAM W. MILLAR, Executive Director, Port Authority of Allegheny County, Pittsburgh, Pennsylvania (Past Chairman, 1992)
CHARLES P. O'LEARY, JR., Commissioner, New Hampshire Department of Transportation, Concord
NEIL PETERSON, Executive Director, Los Angeles County Transportation Commission, Los Angeles
DARREL RENSINK, Director, Iowa Department of Transportation, Ames
DELLA M. ROY, Professor of Materials Science, Pennsylvania State University, University Park
JOHN R. TABB, Director and CAO, Mississippi Department of Transportation, Jackson
JAMES W. VAN LOBEN SELS, Director, California Department of Transportation, Sacramento
C. MICHAEL WALTON, Paul D. and Betty Robertson Meek Centennial Professor and Chairman, Civil Engineering Department, University of Texas at Austin (Past Chairman, 1991)
FRANKLIN E. WHITE, Commissioner, New York State Department of Transportation, Albany
JULIAN WOLPERT, Henry G. Bryant Professor of Geography, Public Affairs and Urban Planning

MOVING URBAN AMERICA

Proceedings of a Conference

Charlotte, North Carolina
May 1992

Conducted by
Transportation Research Board

Sponsored by
U.S. Department of Transportation
Federal Highway Administration
Federal Transit Administration

Subscriber Category
I planning, administration, and environment

1993

Transportation Research Board publications are available by ordering directly from TRB. They may also be obtained on a regular basis through organizational or individual affiliation with TRB; affiliates or library subscribers are eligible for substantial discounts. For further information, write to the Transportation Research Board, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

Copyright 1993 by the National Academy of Sciences. All rights reserved.
Printed in the United States of America

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the report were chosen for their special competencies and with regard for appropriate balance.

This report has been reviewed by a group other than the authors according to the procedures approved by a Report Review Committee consisting of the members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

Library of Congress Cataloging-in-Publication Data

Moving urban America: proceedings of a conference [held at the] Adam's Mark Hotel, Charlotte North Carolina, May 6-8, 1992 / conducted by Transportation Research Board.
p. cm. — (Special report ISSN 0360-859X; 237)
"Sponsored by U.S. Department of Transportation, Federal Highway Administration, Federal Transit Administration."
Includes bibliographical references.
ISBN 0-309-05405-2
1. Urban transportation—United States—Planning—Congresses. 2. Urban transportation—United States—Congresses. I. National Research Council (U.S.). Transportation Research Board. II. United States. Federal Highway Administration. III. United States. Federal Transit Administration. IV. Series: Special report (National Research Council (U.S.). Transportation Research Board) ; 237.
HE308.M68 1993
388.4'0973—dc20

92-35101
CIP

Cover design: Karen L. White

for Conference on Moving Urban America

LAWRENCE D. DAHMS, *Cochair*, Metropolitan Transportation Commission, Oakland, California
JACK KINSTLINGER, *Cochair*, KCI Technologies, Inc., Baltimore, Maryland
HARVEY R. ATCHISON, Colorado Department of Transportation, Denver
SHARON D. BANKS, Alameda-Contra Costa Transit District, Oakland, California
SALVATORE J. BELLOMO, Bellomo-McGee, Inc., Vienna, Virginia
SARAH C. CAMPBELL, Surface Transportation Policy Project, Washington, D.C.
CHESTER E. COLBY, Metro-Dade County Transportation Authority, Miami, Florida
BRIGID HYNES-CHERIN, San Francisco County Transportation Authority
CHRISTINE M. JOHNSON, New Jersey Department of Transportation, Trenton
RONALD F. KIRBY, Metropolitan Washington Council of Governments, Washington, D.C.
GEORGE T. LATHROP, City of Charlotte Department of Transportation, Charlotte, North Carolina
BRUCE D. MCDOWELL, U.S. Advisory Commission on Intergovernmental Relations, Washington, D.C.
DORN C. MCGRATH, JR., George Washington University, Washington, D.C.
ROBERT E. PAASWELL, University Transportation Research Center, City College of New York, New York
HENRY L. PEYREBRUNE, New York State Department of Transportation, Albany
JOHN P. POORMAN, Capital District Transportation Committee, Albany, New York
HARRY A. REED, Arizona Department of Transportation, Phoenix
ROGER L. SCHRANTZ, Wisconsin Department of Transportation, Madison
DAVID F. SCHULZ, Northwestern University Infrastructure Technology Institute, Evanston, Illinois
JOEL E. STONE, JR., Atlanta Regional Commission, Atlanta, Georgia

ALAN C. WULKAN, Parsons Brinckerhoff Quade & Douglas, Inc., Tempe, Arizona

Liaison Representatives

CYNTHIA J. BURBANK, Federal Highway Administration, U.S. Department of Transportation

DAVID CLAWSON, American Association of State Highway and Transportation Officials, Washington, D.C.

SHELDON M. EDNER, Federal Highway Administration, U.S. Department of Transportation

KEVIN E. HEANUE, Federal Highway Administration, U.S. Department of Transportation

GLORIA J. JEFF, Michigan Department of Transportation, Lansing

BARNA JUHASZ, Federal Highway Administration, U.S. Department of Transportation

JANET P. OAKLEY, National Association of Regional Councils, Washington, D.C.

ROBERT G. STANLEY, American Public Transit Association, Washington, D.C.

SAMUEL L. ZIMMERMAN, Federal Transit Administration, U.S. Department of Transportation

Resource Writer

DANIEL BRAND, Charles River Associates, Inc., Boston, Massachusetts

Transportation Research Board Staff

ROBERT E. SPICHER, Director, Technical Activities

JAMES A. SCOTT, Senior Program Officer

NANCY A. ACKERMAN, Director, Reports and Editorial Services

LUANNE CRAYTON, Assistant Editor

Preface

Jack Kinstlinger
KCI Technologies, Inc.

THE OBJECTIVE OF THE CONFERENCE on Moving Urban America, held in Charlotte, North Carolina, May 6–8, 1992, was to advise the United States Department of Transportation, the community at large, and state and local elected officials on the appropriate planning and decision-making process needed to select and develop projects that will improve urban mobility, with emphasis on efficiency, concern for the environment, and shared responsibilities among agencies and affected groups, all within the context of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Clean Air Act Amendments of 1990 (CAAA).

Conference participants attempted to identify the relevant issues, clarify the new partnerships and relationships that will be formed, and identify planning and decision-making processes that will enhance urban mobility.

The enactment of ISTEA provided state and local authorities with unprecedented financial capacity and critically needed programming flexibility to develop economical, efficient, and environmentally sound transportation systems. At the same time, new prescriptions have been established concerning institutional arrangements and environmental constraints.

driven by financial eligibility. Although flexibility opens up new opportunities and a greater variety of choices, it may also represent obstacles to prompt decision making because a much larger number of actors will now be discussing a much greater variety of possible solutions.

In practice, perhaps the struggle for the optimum solution will result in disagreement, stalemate, and ultimately, lack of effective programs and actions. That is one of the major challenges to be confronted.

This conference presented an opportunity to recommend a vision and innovative approach that will pull together the divergent participants and result in effective decision making.

This conference was the seventh major conference to address the issue of more effective urban transportation. It carries on a tradition dating back 36 years to the 1957 conference in Hartford, Connecticut, during which members of the highway community and professional planners debated whether construction of urban Interstate highways should be suspended until comprehensive land use plans could be adopted. The 1958 conference in Sagamore, New York, was attended by elected officials and highway engineers who discussed building the urban Interstate highway system. The challenge at the time was to open up the country to rapid post-World War II development. It was seen largely in the context of highway engineering at a time when study techniques were still crude.

The 1962 conference in Hershey, Pennsylvania, was held to resolve the conflicts between highway officials, and federal housing officials and land use planners, who wished to see urban values and urban planning become a more central part of transportation decision making and argued that transportation is more than an engineering challenge.

The 1965 conference in Williamsburg, Virginia, was sponsored by the American Association of State Highway and Transportation Officials, the National League of Cities, and the National League of Counties. Announced at the Williamsburg conference were a number of resolves to encourage a cooperative planning process, a desire that transportation decisions be driven by urban values and goals, a hope that urban highways be consistent with regional and local land use plans, and a plea that a continuing transportation planning process be established.

The 1971 conference in the Poconos, Pennsylvania, was the first sponsored by the Transportation Research Board. Ted Holmes, of the Federal Highway Administration (FHWA), who was long regarded as

elected officials, rather than professional planners, become primary actors in the planning process and in the conferences.

Finally, participants at the 1982 Airlie House conference in Virginia recommended a more flexible urban transportation planning process, adjusted to the nature and scope of individual area problems and individual sectors and corridors. Conferees urged that the federal government be more flexible in its prescriptions and that regulations be streamlined in order to leave decisions to state and local governments.

Many concepts that are often taken for granted were born at these conferences. Heated debate, dissension, and finally, compromise at the conferences produced concepts such as intermodalism and balanced transportation; citizen participation; environmental protection; partnership arrangements among state and local governments, MPOs, transit authorities, and citizen groups; relationships between transportation and land use, and transportation systems management and traffic demand management.

It is interesting to look back and remember how radical many of these concepts were 10, 20, or 25 years ago and how conferences such as this one resolved many of those issues and moved the process along.

Ten years or so from now the participants at the next urban transportation conference will refer to the Charlotte conference as another milepost at which innovative approaches were adopted and the art and science of urban transportation decision making was moved one step further in its evolution.

The major obstacles have rarely been technical issues. There is ample evidence to show that, given sufficient funding, we have most of the knowledge and skills to solve the technical problems of improving urban transportation by repairing or constructing additional highway lanes, transit lines, stations, and services, and even such relatively new concepts as intermodal terminals, high-occupancy vehicle lanes, ramp meters, incident management, intelligent vehicle-highway systems, and the like.

The more difficult and vexing challenges have always been the institutional ones of achieving effective decision making among different advocacy groups and power sharing among federal, state, and local elected officials, and bringing together and synthesizing vastly different sets of values and priorities.

The enactment of ISTEA represents a new era for state and regional transportation planning in the following context:

- State and local governments are now given more flexibility in determining transportation solutions and greater flexibility to transfer money between program accounts.
- State and local governments must develop, establish, and implement management systems (bridge, pavement, safety, congestion, public transportation, and intermodal facilities and systems), thereby placing greater emphasis on managing the transportation system, as opposed to making capital investments.
- The relationship between planning and decision making is strengthened, and six new management systems are authorized. Planning process requirements are included, and the preparation of long-range plans and transportation improvement programs at statewide and metropolitan levels is authorized.
- Emphasis is placed on activities that enhance the environment, such as wetland habitat, historic sites, and activities that contribute to meeting air quality standards.
- Attainment of national ambient area air quality standards is emphasized through funds for projects in clean air nonattainment areas for ozone and carbon monoxide.
- Increased emphasis is placed on public participation by those affected by the quality of transportation systems provided—the new stakeholders at the state and regional levels.

The following are some of the critical issues confronting urban transportation decision makers.

Can transportation engineers recognize that lay citizens and elected officials have legitimate points of view concerning repair or construction of transportation facilities and provision of services?

Can transportation professionals accept that environmental and social issues can be as crucial and legitimate as mobility and economic considerations?

Can environmental advocates move beyond being single-issue spokespersons and recognize that mobility and economic development are crucial objectives of society?

How can transit and state transportation agencies develop the staff,

Can MPOs move beyond performing technical studies, travel demand forecasting, and long-range plans consisting largely of wish lists, and begin to recognize the importance of fiscally restrained programs, phasing of construction, system preservation, and the need to develop skills in cost estimating and project scheduling or accept input from agencies that have those requisite skills?

Do councils of governments or MPOs have the political will to resolve interjurisdictional conflicts and rank individual projects, which may please some jurisdictions and antagonize others?

Can governors and state legislators recognize that within urban areas, project selection and prioritization must be conducted cooperatively with local elected officials, even though they involve state funds, and that local officials will want to share in the credit of getting the projects constructed but avoid the wrath of those whose projects do not pass muster?

How can planners ensure that funds are used for preservation of the existing system instead of politically glamorous capacity-enhancement projects?

What rational basis do we use to make multimodal project and programming decisions, given the differences between FHWA and Federal Transit Administration (FTA) project development regulations and procedures?

How can elected officials who are involved in making transportation decisions be shown the real effect that CAAA will have on project selection and programming?

How can transportation planners move away from the traditional planning process that has been focused on massive capital-intensive construction projects with high regional visibility that can be easily modeled and move toward smaller improvement models, such as pedestrian paths, bikeways, and safety projects, which perhaps can best be identified by community groups? Although small in scope and cost, projects like these often can mobilize community support and make important contributions to urban mobility.

Finally, how can planners take advantage of the land use powers of local elected officials to facilitate transportation improvement programs by either reserving rights-of-way in advance of project development or protecting the integrity of a facility once it is open to traffic and perhaps avoiding the need to expand the facility in the future by

achieving more effective growth management? The vexing problem of land use, which comes up at each of these conferences and has never been well resolved in terms of transportation interface, must be addressed. Perhaps as local elected officials through their MPOs become more intimately involved in transportation decision making, transportation professionals can finally begin to get a handle on the land use-transportation interface.

Contents

Introductory Remarks 1
Thomas J. Harrelson

Conference Summary 3
Daniel Brand

Conference Findings 20

Workshop Reports 33
State Transportation Plans, *35*
State Implementation Plans, *39*
Management Systems, *46*
Transportation Improvement Programs, *54*
Metropolitan Long-Range Plans, *66*

Resource Papers 79
Issues Facing Urban America, *81*
Charles Royer
Planning: The Challenge of Being the Glue, *91*
Michael D. Meyer
Panelists: *Sarah C. Campbell, James Q. Duane, Gloria J. Jeff*
Partnership and Partnership Development: ISTEA and CAAA—Breakthrough or Mire?, *114*
James E. Kunde and Dale F. Bertsch
Redefining the Urban Partnership: Public-Private Toll Financing Provisions of ISTEA, *128*
Steven A. Steckler
Wanted: Pliable Paradigms for Transportation Investment, *134*
Thomas D. Larson
New Dimensions in Transportation Planning, *147*
Brian W. Clymer

Steering Committee Biographical Information 152

Participants 158

Introductory Remarks

Thomas J. Harrelson
Secretary, North Carolina Department of Transportation

LET ME WELCOME YOU all to North Carolina and to Charlotte, our state's largest city. Although Raleigh is the capital and the seat of government, Charlotte is quickly becoming one of the South's largest business communities. It is indeed a pleasure to be among an audience that truly understands the role of transportation nationwide and in individual states.

Many Americans have become accustomed to good roads, bridges, airports, rail passenger, and other transportation services. Unfortunately, as I am sure you all are aware, many take those transportation services for granted. That is not the case for this group. You know all too well how difficult it is to accomplish a high level of transportation in this country, and that is what we are here to discuss.

I am pleased that we could take this chance to discuss two significant pieces of legislation and how they will affect the future of transportation.

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) was a crucial piece of legislation for many states, particularly North Carolina, which historically has been the number one donor state in the nation. The state is fortunate to have increased its share of

of trying to decide how much additional funding is indeed available for a backlog of projects in our state. ISTEA provides many opportunities and flexibility and allows consideration of innovative and alternative ways of doing business.

The act presents the opportunity to better define and fine tune the roles and relationships of the North Carolina Department of Transportation with metropolitan planning organizations in North Carolina. It will enable us to focus more on transit, ride sharing, and high-occupancy vehicle lanes. We are also excited about the implications and plans for congestion management. Perhaps more important, ISTEA will allow us to tailor solutions to better remedy transportation problems.

Clean air issues will also be another focus during this conference. Since implementation of the Vehicle Inspection and Maintenance Program, air quality has improved significantly in some large cities, but there is still a long way to go. I hope we can gain further expertise on that subject during this conference.

Both the Clean Air Act Amendments and ISTEA will undoubtedly have a large impact on all transportation programs, and as the theme of the conference suggests, it will not be business as usual. Hopefully, today's forum will open the doors for cooperative planning and efforts among federal, state, and local agencies.

Conference Summary

Daniel Brand
Charles River Associates, Boston, Massachusetts

THE CHARLOTTE CONFERENCE ON Moving Urban America was the seventh in a series of landmark conferences held since the late 1950s to anticipate and document major changes in urban transportation planning in the United States. The conference was convened soon after major changes in urban transportation planning, funding categories, and decision making had been authorized by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which incorporated certain requirements of the Clean Air Act Amendments of 1990 (CAAA). The 150 conference participants represented a broad cross section of metropolitan planning organizations (MPOs), private groups, and federal, state, and local governments.

Conference participants shared a tremendous feeling of optimism and empowerment that differed remarkably from that of 10 years ago, when the last in this series of conferences was held. The incrementalism and severely limited view of what was possible then has given way to excitement in the field and many new possibilities and options. This new enthusiasm is promoted by ISTEA's substantial and flexible funding, its new programs, the possibilities offered by such new transportation technologies as intelligent vehicle-highway systems (IVHS), and the emphasis of ISTEA and CAAA on quality-of-life issues. These are good times to be moving urban America.

unprecedented dispersal of power to states and MPOs, coupled with an admonition to engage private citizens and citizens' groups in finding transportation solutions that work in their communities.

There was substantial agreement that better partnerships must be developed to avoid paralysis of the decision-making process. This will require opening up the process and incurring the attendant risks to develop the trust between negotiating parties that allows decisions to be made. Examples of successful partnering are presented in this summary and later in this report.

The conference participants also appeared to be in substantial agreement on many elements of a vision for urban transportation. Clearly, serving the needs of consumers—customers—instead of the more narrow needs of the producers of new transportation capacity should be the first priority. Achieving transportation objectives means that transportation improvements must also operate within environmental and social realities. A user-friendly infrastructure must provide not only transportation capacity but also information on how to use that capacity to increase mobility. A user-friendly system will require different ways of measuring the costs and opportunities of travel for individuals and for the system as a whole.

The vision and findings of the Charlotte conference, elaborated upon in this summary and in the rest of the report, can help push back the old prejudices that still tend to box in transportation planners. The new approaches required by ISTEA require immediate attention.

CONFERENCE OBJECTIVES

The Charlotte conference was held before many vital questions relating to ISTEA had been resolved. These questions ranged from the need for clear federal guidance on required dates and content of required transportation planning documents and how to carry out a defensible analytically based planning process that informs decisions to whether there is a serious intent in today's society to enforce the goals of ISTEA regarding clean air, land use control, and broad participatory decision-making.

In keeping with the newly authorized dispersal of powers, conference participants were not overly concerned with the absence of federal

guidance and regulations on ISTEA. Rather, in a refreshing break with the past, the conference objective—stated at the outset by conference cochair Jack Kintslinger—was as follows:

> To advise USDOT and provide understanding and guidance to the community at large and state and local elected officials on the appropriate planning and decision-making process needed to develop projects that will improve urban mobility with emphasis on efficiency, concern for the environment, and recognizing the shared responsibilities among responsible agencies and affected groups, all within the context of ISTEA and CAAA. It is hoped and expected that conference participants will identify the relevant issues, clarify the new partnerships and relationships that will be formed, and identify planning and decision-making processes that will enhance urban mobility.

Conference planners sought at the outset to establish the current context of transportation decision making so that, in the words of Thomas D. Larson, Administrator of the Federal Highway Administration (FHWA), the conference participants could shape a vision for urban transportation that would empower and enable the planners to satisfy the mobility and other needs of urban America. Conference cochair Lawrence Dahms, Executive Director of the Metropolitan Transportation Commission in San Francisco, urged that the recognition of the significance of emerging congestion and mobility problems not be perceived as anti-environment and that the apparent complexity of the new ISTEA categories and CAAA requirements not overwhelm the participants. Samuel L. Zimmerman of the Federal Transit Administration (FTA) suggested that the success of the conference would be measured by how well the groundwork was laid for the next piece of legislation.

The conference produced a large number of specific findings and recommendations related to context, partnering, planning, the federal role, and the products of urban and state-level transportation and air quality planning. These findings and recommendations are summarized here and presented in more detail later in this report.

ESTABLISHING THE CONFERENCE CONTEXT

transportation planning process. ISTEA ratifies and institutionalizes many of these changes. However, it also leapfrogs current best practice in a number of areas and sets up many new challenges that the conference worked hard to articulate. ISTEA was the product of an activist Congress that imposed unprecedented mandates for a level playing field between modes (flexibility) and gave state and local constituencies unprecedented power and federal dollars to spend according to their own priorities.

The process leading to the enactment of ISTEA resulted from powerful societal forces for change that are not about to subside. America is in the middle of a transition with an uncertain outcome that clearly will be influenced by the following:

- Changing political forces (e.g., loss of faith in the ability of government to solve problems and a sense among ordinary citizens of a lack of power to influence major government actions);
- Technological change (e.g., the consumer electronics revolution, personal computing, and the growth of information utilities); and
- Public- versus private-sector roles (e.g., the active recruiting of the private sector to solve transportation problems).

The significance of this conference becomes clearer in the context of the six previous conferences in the same series. The changes over time in the agendas of those conferences are remarkably faithful reflections of the evolution of concerns leading to this conference. The 1957, 1958, and 1962 conferences reflected the strong support at that time by the political and engineering communities that the Interstate program would open the country to rapid post World War II development. The politicians and engineers were opposed by urban planners and designers, who were already actively voicing their opposition to the new urban freeways because of the social costs and the dislocation caused by the highways. The urbanists and social critics were alarmed, believing that the new highways were driving urban development and not the reverse.

The 1965 conference produced a series of resolves for stronger planning agencies and a desire that transportation decisions be driven by urban values and goals. Conference participants hoped that urban highways would be integrated with regional and local land use plans,

cess. It was recognized that the 3C process required by Section 134 of the 1962 Highway Act did not satisfy the objections of urban planners to the dislocations caused by the new urban Interstate system.

At the 1971 conference, Ted Holmes, a revered transportation planner with FHWA, made some candid remarks. His remarks, as summarized by Transportation Research Board staff in 1992, include the following:

- After the 1965 compliance date (by which analytical travel forecasting processes were to be completed), the 3C process began to flag.
- The process was never completely intermodal.
- Planning administration had collapsed as a result of failure to institutionalize the ad hoc groups that were formed to carry out compliance with Section 134 of the 1962 Highway Act.
- Insufficient attention was being given to environmental and community values.
- Greater citizen participation and controlled land use were necessary.
- The absence of state and local agencies as sponsors of the conference was noted.
- A federal takeover of the planning process might be possible. (This may have been a warning that the U.S. Department of Transportation might seek to administer the urban planning process from Washington.)
- There was a lack of leadership that was exhibited in the past by the leading highway engineers of the former Bureau of Public Roads (now FHWA).

There was considerable discussion at the 1971 conference on how to bring the planning process closer to programming and implementation of projects.

Finally, at the 1982 conference, concern was voiced that planning requirements had become too complex. New planning techniques had not found their way into practice, and future changes in social, demographic, energy, environmental, and technology factors were unclear. On the other hand, fiscal constraints were tight, and the federal government was shifting the burdens of financing and decision making to state

ernment had been overly restrictive in its regulations, making the planning process costly, time-consuming, and difficult to administer. They agreed that regulations should be streamlined, the goals to be achieved should be specified, and the decisions on how to meet them should be left to the states and local governments (*1*). The findings of the 1982 conference are a logical precursor to those of the Charlotte conference.

Another contextual view of events leading up to the Charlotte conference was expressed by Daniel Brand of Charles River Associates. He stated that when these conferences started in the late 1950s, the Interstate highway system was the single solution, or single vision, as Sarah Campbell of the Surface Transportation Policy Project (STTP) called it. The highways were built with 90 percent federal funding and no cost ceiling for approved mileage. Since there was no cost cap and the federal matching ratio was so high, the highways were built as large as possible and represented an attempt to solve as many transportation problems as possible. Gold-plated was an adjective sometimes used to describe urban Interstate highways.

Unfortunately, those big new highways brought with them some displacement of residents and jobs. The conference heard Charles Royer, former mayor of Seattle, state, "You can't build fancy transportation systems across some of these chasms that are opening up in American society. You can't connect burning downtown buildings with one-acre lots in suburbia. You can't connect rich places with very poor places. You can't connect white places with black places." The early conferences in the Charlotte series were a response to the urban highway revolt of the 1950s and 1960s. Local planners and public officials were up in arms because of the decline of the central city, which was caused by many factors (not only the new highways).

An early response to these controversies was to implement an analytic process. Section 134 of the 1962 Highway Act required regional land use and travel forecasts to be carried out by July 1, 1965. New planning agencies were set up to conduct the new technical studies. Those were exciting times, and many professionals may remember the exhilaration of that era of mushrooming analytic methods development.

models pointed to certain solutions, but the plans had no bearing on the decisions that were made. The 1962 Highway Act did not marry decision makers to their planners, or even to their planning agencies. The analytic process faltered by the time of the 1965 conference, but this shortcoming was not stated openly until the 1971 conference.

Between the 1971 and 1982 conferences, a multiplicity of federal program categories promoted certain solutions, including transit. Local transportation investments were driven in large part by their financial eligibility under the federal program categories. The urban transportation policy of most states and regions became one of matching federal dollars. This policy may have been attractive for a while, when federal funding was growing (especially for new urban programs like transit), but by the time of the 1982 conference, the Reagan era and a major recession had combined to reduce federal spending and, certainly, federal transportation leadership.

The decade between the 1982 and 1992 conferences has culminated in ISTEA. The events of the last 35 years have established today's context. The insights and findings of the 1992 conference will help shape and express the vision for the future.

THE VISION

The 1992 conference keynote and resource papers in this report present excellent vision statements for urban transportation. In his keynote speech, Larson stressed, "Applying the new directions embodied in ISTEA demands a sea change in the way we think about transportation investments and the role they will play in our society. Passage of ISTEA provides prima facie evidence that efficient achievement of our transportation objectives will be defined principally in terms of the customers transportation must serve and by the constraints within which it must live."

Larson described the earlier producer view of transportation, noting, "Since we tended to think in terms of facilities to accommodate vehicle miles traveled (VMT), there was little motivation to think of individual customers." He traced the producer mentality of the highway builder back hundreds of years in this country to "an historic policy to open up the country and thus provide access and interregional movement

continued to do what we did as a nation, through the canal era, the railroad era, and the early highway era."

ISTEA requires explicit consideration of whether adding transportation capacity in ozone and carbon monoxide (CO) nonattainment areas produces more, rather than less, air pollution. Indeed, CAAA establishes the principle of regional emissions budgets and conformity to the emission reduction schedule in state implementation plans (SIPs). In nonattainment transportation management areas (areas with populations greater than 200,000 that contain nonattainment areas), highway projects that significantly increase capacity for single-occupant vehicles must be part of an approved congestion management system and SIP. Understandably, FTA Administrator Brian Clymer stated in his conference keynote speech: "I think a dozen or so years from now . . . when we look back on the early 1990s, we will have no problem saying that ISTEA was merely the second-most important piece of legislation to emerge from this era. The law that probably really changed the transportation landscape could well turn out to be the Clean Air Act Amendments of 1990."

Indeed, the amendments require the minimization or management of VMT and other transportation measures as surrogates for control of CO, hydrocarbon, and nitrogen oxide vehicle emissions to achieve National Ambient Air Quality Standards for ozone and CO.

The 1992 conference may be said to mark the end of a 200-year era in this country of unbridled expansion of transportation facilities that increase capacity to accommodate some fixed expected demand. Most urban travel demand models are well known to be deficient in their ability to evaluate the travel effects of added transportation capacity (2). The evolution of urban transportation investment policy from producer-driven to consumer- and social-cost-driven is only as old as this series of conferences, of which the 1992 conference may be said to represent the turning point.

Continuing with the emerging vision of the importance of the user view, Robert Kochanowski, Executive Director of the Southwestern Pennsylvania (Pittsburgh) MPO, stated, "Much has been said about congestion management being measured by level of service, by traffic volume. But a number of us believe strongly that congestion management . . . must be based on user and market information as well as simple traffic patterns."

bility, which is the goal transportation planners seek, is measured by the opportunities for and the benefits from travel. Transportation planners should plan to maximize the net benefits from travel, not to produce an elusive LOS performance standard. Measures of mobility differ from measures of congestion.

Larson offered the telecommunications industry as a model for a new transportation paradigm. It "builds and operates for the public a pervasive infrastructure network at a large initial cost that is shared by a wide variety of customers for pleasure and private productivity enhancement. It's known for its user friendliness." Indeed, the development of a user-friendly information infrastructure to complement and increase the productivity of the massive and growing investment in transportation infrastructure is what differentiates IVHS strategies from conventional increases in transportation capacity (*3*).

The concern for mobility as contrasted with congestion and the concern for the user and not the facilities as ends in themselves were recurring themes in the 1992 workshops. The user and information orientation, together with the rapid pace of technological change, accounts for much of the current excitement in transportation and the dramatic increase in the number of transportation improvement options being considered today. Providing users with improved information on travel choices to influence their travel decisions may by itself reduce the social costs of travel on existing transportation facilities (*4*).

NEW PARTNERING

The theme of partnering pervaded the conference. Conference organizers recognized the need to learn how to work together in the new urban transportation partnership mandated by ISTEA. The challenge is to bring all the new actors with diverse interests together in a new partnership capable of agreeing on an efficient mix of intermodal projects. Without effective partnering, the result will be paralysis—instead of progress—from ISTEA's unprecedented dispersal of power in transportation decision making (*5*).

James Kunde, Executive Director of the Public Services Institute in Lorain County, Ohio, and an expert on negotiation, presented a resource paper on partnering. He cited the importance of involvement,

having all parties at the table . . . discovering the same thing at the same time. Without simultaneous involvement, he said, four agencies or decision makers, who may be 80 percent in agreement (which is high), will with sequential meetings and no feedback agree less than 50 percent of the time. He cited negotiation as the only way to implement anything, by getting everybody together at the same time and coming to one common conclusion.

Royer cited the results of recent research that supported this conclusion. In addition to reminding conference participants that faith in government is at a low level and that solutions to any urban problem that have broad appeal are extremely hard to find, he cited recent research that found that the only predictor of a high level of confidence in city government is a high level of civic involvement. "People are generally satisfied . . . if they are part of the action."

Kunde stated, "If you watch a process and you see it move from conflict to a psychology of agreement, it changes the chemistry of what is happening." This process was readily apparent in the SIP workshop. Hank Dittmar, workshop chair, reported: "After 9 hr of working together in probably the most divisive area in transportation—the transportation-air quality arena—our diverse group learned how to trust and how to communicate with one another. Our microcosm thus reinforced the basic finding of the conference: if one takes the risk to open the process up, anything becomes achievable."

Campbell added, "[My] view [is] that one of the things that improves governance and that will improve the outcome of our transportation processes and will improve, ultimately, our products is an openness. This is no longer a closed union shop."

The ultimate test of partnering in implementing ISTEA, according to Kunde, will depend on the degree to which MPOs can accommodate the challenge of becoming effective as real political decision-making bodies. There was considerable agreement at the conference that many MPOs had a long way to go in the ISTEA process. Jim Duane from the Ohio-Kentucky-Indiana Regional Council of Government (the Cincinnati Region MPO) said, "We have been left out in the past, we continue to be left out, and the biggest issue facing [an MPO] today is that it is the new partner, it is the most active partner, it is the partner that is, in

Dennis cited that with his "99 cities, 9 counties, 23 transit operators, and 9 congestion management agencies, and a whole bunch of others in the region, partnership is not a new thing, it's an old thing." His agency anticipated the passage of ISTEA and, practicing "the inclusion word that we have heard today [at the conference]," convened a new group of 36 partners to try to move joint projects faster. All 16 joint projects on this group's agenda are now moving ahead faster than before, because the "spotlight" has been put on these "multiple agency projects, which are the ones that tend to get the least attention. . . . So we are building on the idea that nothing succeeds like success. We want to show that partnership can really be effective and keep the momentum alive."

In summary, the conference recognized that money and power in urban transportation are devolving to the local level, where the most serious problems are. Many hard choices will have to be made in many regions to resolve the conflicts between mobility and environmental objectives. The time has passed when these hard choices were imposed from on high (at the federal level). When they were, faith in government fell and government failed. Value judgments on the hard choices must now be made locally, and local participation—civic involvement—can breed confidence in government, as conference participants heard from Royer.

If the only remedy for democracy is more democracy, ISTEA is on the right track. It has legislated more democracy, more power away from Washington and away from state capitals to MPOs charged with involving private citizens and local groups in local decision making. Hopefully this will make people decide to close the gap between their ideals and what their government decides in urban transportation. We hope to restore faith in government, even if an excess of democracy risks a few mistakes.

CONFERENCE FINDINGS

After the presentations, panels, and plenary session discussions of the context of ISTEA and the need for a new partnership in urban transportation, conference participants broke into workshops to produce specific findings and recommendations. These findings represent the real contribution of this conference to urban transportation planning. As per the conference objectives, they provide understanding and specific

guidance to the community at large and to state and local elected officials.

The workshops that produced conference findings were focused on products of the transportation planning process:

- State transportation plans,
- SIPs,
- Management systems,
- Transportation improvement programs (TIPs), (both metropolitan and state plans), and
- Metropolitan long-range plans.

Workshop participants assembled for 3-hr discussions on (*a*) context and partnerships, (*b*) products, and (*c*) different needs of areas.

The first round of workshop discussions was focused on the context, challenges, and opportunities for successful partnering in promoting the objectives of ISTEA and CAAA. The second round was focused on specific issues and conflict areas related to producing the planning document of concern to the workshop (e.g., SIPs). These issues included the following:

- Power sharing;
- Land use controls at the local level versus regional- and state-level transportation investments;
- Integrating air quality into transportation decisions;
- Training needs;
- Appropriate technical roles of actors;
- Intermodal and multimodal factors;
- Integration of transportation programming, including ISTEA's 19 identified factors and 6 management systems;
- Ensuring public involvement;
- Funding flexibility across modes and functions (e.g., operating versus capital); and
- Private-sector involvement.

In the third round of workshops, participants considered the needs of specific regions according to their size and status (e.g., small areas,

The findings summarized here and presented in more detail in the rest of this report cannot represent an encyclopedia of good practice. However, just as with the products of the six previous conferences in this series during the last 35 years, these findings faithfully reflect the concerns and aspirations of a broad cross section of current participants in urban transportation planning and decision making. The first set of findings summarized here cuts across specific transportation planning products. This summary is followed by a summary of findings relating to each planning product. The findings and recommendations do help to, in the words of Larson, "shape a vision for urban transportation that will empower and enable us to satisfy the mobility and other needs of urban America."

Findings on Crosscutting Issues

Context of ISTEA

- The promise of ISTEA is dependent on achieving broad commitment to realistic, achievable results.
- The multiple factors that must be considered in adopting state and regional transportation plans expand their scope to embody a vision for improved quality of life.
- States and MPOs must expand public participation to involve the full range of community interests, to educate and be educated, if this new scope of planning is to be meaningful.
- The vital, but elusive, transportation-land use connection demands the special attention of transportation planning officials.
- The perceived complexity of the combined air quality and transportation planning process must be simplified if it is to meaningfully include informed citizen involvement.

Partnerships

- The advantages to be derived from ISTEA's flexible funding depend on decisions to be made cooperatively by state and local officials.

- Inclusion of the Environmental Protection Agency (EPA) as an active partner, without compromising its regulatory function, is critical to successfully blending air quality and transportation planning into a single integrated function.
- Real risk of decision gridlock confronts those choosing to ignore the mutual veto powers emanating from ISTEA and the Clean Air Act—creating pressure for emerging partnership roles to be reconciled quickly.

Planning Process

- Newly required management systems and planning products must be integrated in order to fully benefit from their individual development.
- Particular attention must be given to product phasing for which, in the initial stages, ISTEA has not provided for sequential development (e.g., state and MPO plans are due concurrently).
- Attention must also be paid to transition problems stemming from the absence of federal guidance, as in the case of TIP development without EPA conformity guidance.

Federal Role

- Federal guidance should be general and flexible; federal agencies should support local initiatives undertaken in advance of regulation and encourage experimentation.
- Federal agencies should be clearinghouses to provide timely exchange of ideas, sharing of diverse experiences, and reports of strategies and activities that are and are not effectively advancing the revised planning process.
- Federal agencies should act as catalysts and provide resources for needed research and technical assistance to upgrade analytical tools and training vitally needed by the planning profession.

Findings Relating to Specific Planning Products

State Transportation Plans

- *Partners.* The plan of each state should define the roles to be filled

consideration of the 23 factors listed in ISTEA comes into play, integration of the management systems, metropolitan long-range plans, and SIPs. The plans should explicitly set forth a strategy for their adoption and commitment.

- *Integration/Interaction.* The complex interrelationship of plans and management systems poses more of a challenge than development of any individual plan. Building and nurturing an understandable process for plan integration and agency interaction will be critical.
- *National Highway System (NHS).* NHS remains the single most dominant element of any state plan. It must be defined and improved in the context of the overall state-MPO planning process.

State Implementation Plans

- SIPs cannot stand alone. Their development must be integrated as part of the process of developing the state and regional transportation plans.
- Air quality agencies and transportation agencies should join forces to define feasible and defensible transportation pollutant reduction targets.
- Transportation control measures should also be developed jointly by air quality and transportation agencies.
- TIP conformity regulations should be distinct from conformity determination for the long-range transportation plans. To hold the long-range plans to the same rigid fiscal constraints would undermine exploration of alternatives that should be encouraged at this stage.
- A specific research agenda must be promulgated to better understand the promise and limitations associated with transportation–air quality trade-offs.

Management Systems

- The six management systems must be viewed as an interrelated package, not as six stand-alone products.
- Generally, highway pavement, bridge, and highway safety management systems are well established, but they need to be integrated, especially in their common data requirements.

- Congestion management is a key system in the overall planning decision process. It includes both short- and long-term perspectives and will require a new perspective on system multimodal performance.
- A five-step process for developing the congestion (mobility) management system (CMS) would
  - —Define multimodal and multi-user state and metropolitan systems;
  - —Define LOS, operating characteristics, and system deficiencies;
  - —Examine by user group the mobility of people and goods for the system;
  - —Examine nonuser and externality effects of each system (e.g., air quality, etc.); and
  - —Define multimodal solutions to correct most critical deficiencies.
- The public transportation and intermodal management system development should be guided by the five-step CMS process plus guidance on such specific issues as multimodal transfers and freight movement.

Transportation Improvement Programs

- State and metropolitan TIPs must conform with each other. This requires an interactive process in which the funding available to programs in TIPs is mutually understood.
- Project selection should flow equitably from TIPs, requiring proportional sharing of obligational authority and reliance on the authorization level as a cap in programming any fund category.
- Technical tools must be developed to support effective multimodal programming.
- Special efforts are required to make the TIP process meaningful and available to the broader range of participants that should now be involved.

Metropolitan Long-Range Transportation Plans

- Long-range plans should define an integrated multimodal and intermodal transportation system.
- Although long-range plans are required to be realistic and implementable, they should not constrain a region's vision. In this sense, the

- The multiple functions enumerated by ISTEA to be considered in developing long-range plans imply that they must extend beyond a narrow transportation focus to embrace land use, air quality, and other social and environmental issues.
- Technical deficiencies that need to be addressed in improving long-range plans include (*a*) distinguishing the appropriate scale of systems versus project level analysis, (*b*) recognizing the renewed reliance on and integration of transportation and air quality modeling, and (*c*) developing methods to measure the soft quality-of-life characteristics, such as safety, community cohesion, aesthetics, and environmental balance.

REFERENCES

1. E. Weiner. Summary Statement for Airlie House Conference. *In Urban Transportation Planning in the United States: A Historical Overview*, rev. ed. U. S. Department of Transportation, Feb. 1986.
2. D. Brand. Study of Travel Forecasting Models to Evaluate the Travel and Environmental Effects of Added Transportation Capacity. Presented at DOT/EPA Conference on the Travel and Environmental Effects of Added Transportation Capacity, Bethesda, Md., Dec. 1991.
3. *Special Report 232: Advanced Vehicle and Highway Technologies*. TRB, National Research Council, Washington, D.C., 1991, pp. 34 ff.
4. D. Brand. Point of View: Intelligent Vehicle Highway Systems: A Smart Choice for Travelers and Society. *TR News*, May–June 1992.
5. J. Peterson. Highways vs. Mass Transit Impasse Threatens $1 Billion in Annual Federal Aid: A New Law Gives Mass Transit an Equal Claim on Transportation Aid. *The New York Times*, June 27, 1992, p. 28.

Conference Findings

THE CONFERENCE ON MOVING Urban America occurred a scant 4 months after passage of the landmark Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), well before a consensus of opinion had developed on the importance of the act or its impact on urban communities. This factor, along with an attempt by the conference committee to invite a diverse group of urban, statewide, federal, and public interest groups, led many to doubt whether the conference would result in findings and conclusions. The workshop sessions did result in the identification of a broad set of findings and conclusions, many of which represented consensus among all five workshop groups. Those findings are presented here on crosscutting issues.

In addition, each of the five workshop groups developed a set of findings and conclusions specific to their assigned topic area. These findings and conclusions were presented to conference attendees at the concluding session. Summaries of the workshop findings are presented here; complete workshop reports are presented later in the report.

FINDINGS ON CROSSCUTTING ISSUES

ally were consistent with the conference focus on issues related to the changing context for urban mobility, emerging partnerships, the evolving planning process, and the changing federal role.

Context of ISTEA

The promise of ISTEA is dependent on achieving broad commitment to realistic, achievable results. The ambitious objectives outlined in ISTEA must be translated into realistic and achievable expectations. It is not an issue of not meeting the expectations of ISTEA. It is not an issue of lowered expectations. Each metropolitan planning organization (MPO) and state must work cooperatively with the stakeholders involved in carrying out this new planning and programming process and set realistic mutual goals—ambitious, but realistic, goals—for which results can be demonstrated to Congress as a progress report on the achievement of its lofty expectations.

The multiple factors that must be considered in adopting state and regional transportation plans expand the plans' scope to embody a vision for improved quality of life. ISTEA calls for MPOs and states to consider 15 and 23 separate factors, respectively, in formulating plans, programs, and management systems. Taken together, the requirement to consider these new factors can be seen as expressing the intent of Congress to reform the transportation planning and programming process to better address the needs of the customer, the user of transportation systems. For the user, transportation means mobility, and mobility is inextricably linked to quality of life. This new orientation to customers and quality of life means a new approach to process, product, and measurement of success. Performance becomes more important than capacity, and integration of transportation plans with community goals becomes more important than vehicle miles traveled.

States and MPOs must expand public participation activities to involve the full range of community interests—to educate and be educated—if this new scope of planning is to be meaningful. Each area must reach out and involve people in the development of new plans and programs. In addition to direct governmental partners, the process

must also include advocacy and public interest groups, such as the American Association of State Highway and Transportation Officials, the National Association of Regional Councils, the Surface Transportation Policy Project, the American Public Transit Association, the American Planning Association, and city and county groups, including the National League of Cities and the National Association of Counties.

Members of the transportation community must be open to education by new people and partners. The partnership and outreach process is a two-way street. Just as people who are not accustomed to the acronyms and the process need to be involved and educated, members of the transportation community must be open to expanded partner interests and to their processes and expectations.

The vital, but elusive, transportation–land use connection demands the special attention of transportation planning officials. An activist role is necessary in state and local economic development to make the land use and transportation connection. States and MPOs can no longer relegate transportation–land use planning to local governments because ISTEA requires consideration of the impact of transportation decisions on land use.

The perceived complexity of the combined air quality and transportation planning process must be simplified if it is to meaningfully include informed citizen involvement. A perception appears to have developed that implementing flexibility is difficult, that ISTEA is complex, and that everything is grinding to a halt. Transportation professionals should concentrate instead on moving forward; taking small, positive steps; and seizing the opportunity that ISTEA presents. It is important to maintain the high level of optimism that accompanied passage of the bill by Congress and to sustain that momentum and commitment.

Partnerships

The advantages to be derived from ISTEA's flexible funding depend on decisions to be made cooperatively by state and local officials. New partnerships must be developed to transcend the barriers that divide existing power centers. MPO officials should take a new look at the members and constituents of MPOs and seek a new affirmation of the

stakeholders and should be major players in the MPO process if this effort is expected to work.

The Environmental Protection Agency (EPA) must become an active partner throughout the combined transportation–air quality planning process. A conflict is perceived between the regulatory role of EPA and the resulting desire of agency officials to stay at arm's length throughout the conformity and state implementation plan (SIP) development processes and the desire of members of the transportation community to have EPA as an active and outspoken partner whose expectations and needs are fully expressed at the outset. It is possible for EPA officials to be involved throughout the process of developing SIPs by reviewing assumptions and providing feedback without compromising the agency's regulatory function. This informal advisor role should result in a better plan and reduce the likelihood of plan disapproval by EPA because of faulty basic planning assumptions, emission inventories, or forecasts.

Real risk of decision gridlock confronts those choosing to ignore the mutual veto powers in ISTEA and the Clean Air Act, creating pressure for emerging partnership roles to be reconciled quickly. ISTEA provides states and MPOs with veto power over transportation improvement programs (TIPs), long-range plans, conformity, and SIPs. Unless state and MPO officials agree to share information, ideas, desired outcomes, and indeed, money, that veto power threatens to bring the process to a standstill.

Planning Process

The newly required management systems and planning products must be integrated in order to fully benefit from their development. The management system process must be integrated with long-range plans and TIPs, but first, aspects of each element that need to be integrated must be identified. More discussion and research, particularly on management systems, is required. Clearly, management systems will provide the data on system conditions and performance that are necessary to planning and programming.

Particular attention should be given to product phasing for which, in the initial stages, ISTEA has not provided for sequential development

accommodate ISTEA objectives. The implementation schedules in ISTEA may hinder establishment of the desired linkages and integration among the different management systems, the metropolitan and state long-range plans, and the programming TIPs.

Flexibility is necessary in implementing the requirements of ISTEA to ensure that the benefits of coordination are achieved and that a haphazard job does not result from simply trying to meet the legislative deadlines.

Transition problems may arise from the absence of federal guidance, particularly in the case of TIP development without conformity guidance from EPA and the Federal Highway Administration (FHWA). Some real transition problems exist. A key example is the current problems with developing 1992–1993 TIPs and long-range plans in the absence of final EPA conformity guidance. In this case, how does one proceed with plan development while anticipating pending regulations and not find oneself in the precarious and untenable position of anticipating too much and being required to go back and rework something at the last minute? These are practical issues that must be resolved.

Federal Role

Federal guidance should be general and flexible, supportive of local initiatives undertaken in advance of regulation, and encouraging of experimentation. At this stage, federal guidance should generally be flexible and not prescriptive and should encourage experimentation and inclusion of nonstandard, nontraditional groups in the process. At the same time, once the guidance is finalized, it should be administered in such a way as to foster, not undermine, the innovative local efforts transportation planners are being encouraged to undertake as a result of flexible guidance.

In essence, FHWA and Federal Transit Administration (FTA) officials are being flexible and encouraging innovation, and transportation planners are taking the time to form solutions that are appropriate to individual states. One concern is that after a 2-year delay, prescriptive guidance will be issued that might require damaging rollbacks in state and local procedures.

innovative solutions and to plead that they not adopt regulations that would undermine that flexibility.

Federal agencies should be clearinghouses to provide timely exchange of ideas, sharing of diverse experiences, and reports of successful and failed experiments with the revised planning process. The need to get the word out early on what is and what is not working is critical. The knowledge and experience of different areas should be disseminated and shared widely.

It is also important to have staff exchanges. Federal, state, and local employees assigned to work in different levels of government can share their knowledge with the host agencies while gaining knowledge to share with their home agencies, all in an effort to make the new partnerships work.

Federal agencies should act as catalysts and provide resources for needed research and technical assistance to upgrade analytical tools and training vitally needed by the planning profession. A new commitment is needed for public, private, and academic reinvestment in staff training at the federal, state, regional, and local levels. This is a difficult challenge right now, in light of the nationwide budget crises.

Research and technical assistance are necessary to upgrade analytical tools with a particular focus on the needs of customers. Opening up the partnership will result in more scrutiny of the data and methodology that support transportation decisions. As a result, the partners need tools that provide concrete data and justifications to support the positions that are being taken, make multimodal trade-offs, and document the impact of decisions.

SUMMARY OF WORKSHOP FINDINGS

State Transportation Plans (STPs)

State plans should define the roles of the governor, the state department of transportation, MPOs, and other state, regional, and local agencies contributing to their development and implementation. The development of state plans should be a collaborative process reflecting the role of each partner in transportation system development and operation.

management systems, and metropolitan long-range plans. STPs should define a 20-year vision and set forth performance objectives to measure progress made toward attaining that vision. The plan should be the statewide integrating document for broad statewide policies, management systems, metropolitan plans, and SIPs. Availability of financial resources should guide the plan, but not constrain it. The 23 factors defined in ISTEA for statewide consideration will serve to identify a frame for policy development.

Development of STPs should be both a bottom-up and a top-down process through integration. Neither states nor MPOs should dominate the planning process. In the partnership model, each has an appropriate role to play. State officials must begin by defining a statewide policy context and disseminating policy directions to guide the development of metropolitan long-range plans. The strategic documents would be guided by the considerations noted previously and include a 20-year financial estimate and information from the management systems to aid the regions.

Metropolitan long-range plans would then be developed in a manner consistent with and building from the policy directions, management systems, and financial input from the state. These inputs would be integrated with the policies of the area to develop 20-year metropolitan plans. The metropolitan plans would then be integrated into a statewide planning document along with interregional and rural inputs.

From the beginning, STPs must include a strategy for adoption. The complexity of the management system and planning process argues for state plans to be accompanied by explicit adoption strategies that involve the stakeholders, ensure the development of a consensus for approval, and lead directly to the implementation of planned programs and activities. Adoption strategies must be broad enough to include legislatures and governors.

The National Highway System (NHS) remains the single most dominant element of any state's plan. The strategy for the definition and improvement of NHS must grow from the overall state and MPO planning process. The problem herein is that the process for defining

receive so little policy or public attention. This oversight must be addressed as states move from classification to designation.

State Implementation Plans

SIPs must be integrated with state and regional transportation plans. SIPs cannot stand alone. SIPs are targeted at the achievement of a specific federal air quality standard. They only cover 1 of the 23 factors for statewide planning identified in ISTEA. Unlike state plans and metropolitan plans, SIPs do not consider related or external factors, such as congestion, open space, access to employment, or the needs of the economically disadvantaged. Inclusion of broad quality-of-life factors and community goals is the province of the long-range plan. SIPs should be consistent with these overall goals and policies. The schedules for the processes may not be compatible, requiring amendments to SIPs to ensure consistency.

SIPs must be developed through a partnership process that results in feasible and defensible transportation targets. A sequential process for air quality and transportation planning is not enough. The process and legal requirements are so complex and the impact of technical decisions so great that the partnership must be convened at the beginning of the process. It should include development of the emissions inventory and setting of emission reduction targets among stationary, mobile, and area sources. The transportation community must involve itself in these decisions lest the result be transportation control measure (TCM) targets that are unachievable by any means now available to states or MPOs.

TCM plans must be developed in a partnership between air quality and transportation interests. TCM plans need to be developed in the context of the overall transportation planning partnership. Plans must be focused on measures that can be shown to have an air quality impact, can be paid for by the partners, and can demonstrably be implemented, instead of on vague sets of measures that lack real commitment or quantifiable air quality benefits.

A distinction should be made between the conformity determination for TIPs and the determination of air quality conformity for long-range plans. The rigid fiscal and project definition constraints underlying TIP

of alternatives that should be encouraged at the planning stage and would conflict with the need to examine alternatives in the project-level environmental document. Plan conformity should not be at the specific project or program level.

A specific research agenda should be promulgated to provide better understanding of the promise and limitations associated with transportation and air quality trade-offs. One of the great frustrations expressed in this area was the paucity of reliable information on the impacts of decisions that must be made in the air quality process. Research needs to be conducted to guide planners and politicians on the effectiveness of the various TCMs and control strategies available to them.

Management Systems

The six management systems required by ISTEA must be viewed as an interrelated package, not as stand-alone products. Taken as a group, the management systems can be seen as a multimodal package in which the management of the multimodal transportation system is inventoried and assessed in terms of both the conditions of its asset base and system performance. These systems represent processes that are inputs to the ISTEA plans and programs and can provide the information needed to develop priorities and make investment decisions.

Although the asset-based management systems dealing with highway pavement, safety, and bridges are fairly well understood, they should be integrated, especially with respect to data requirements. Data needs for all these systems must be defined and collected through similar integrated reporting packages. If integrated, the asset-based management systems can be used to define the investment necessary to sustain the existing transportation system.

Congestion management systems (CMSs) are key systems in the overall planning decision-making process. CMSs can serve as the higher order systems in which system performance for the multimodal transportation system is evaluated and improved. The CMS vision must be broad enough to encompass the mobility needs of all of the customers of the metropolitan transportation system. This system must go beyond level of service measurements and narrow transportation system management techniques to address broadly defined user needs and market demands.

system definition, assessment of service levels, definition of user needs for both people and goods, identification and integration of external impacts, and multimodal solutions and recommendations. The process would comprise the following steps:

1. Define the multimodal, multiuser statewide and metropolitan systems.
2. Assess system performance and operating characteristics, and identify deficiencies.
3. Examine travel demands by user group and market needs.
4. Identify nonuser and external impacts of systems on the region.
5. Develop multimodal solutions and recommendations, including capital, operating, and market-oriented strategies.

Public transportation and intermodal management systems should follow a similar process, with performance elements of transit systems being integrated into the CMSs. Similarly, intermodal management systems should be focused on the performance of intermodal transfers and included in the multimodal CMSs. The management systems should be integrated in a multimodal manner. CMSs can be the integrating systems for the performance elements of the transit and intermodal systems. The intermodal system should be focused especially on freight movement, an area in need of more attention.

Transportation Improvement Programs

State and metropolitan TIPs must be conformed with one another through an interactive process based on mutually defined and accepted funding targets. Although participants in this workshop did agree that the TIP development process should be iterative, there was considerable debate on whether the metropolitan TIP should automatically form the basis for the statewide TIP in metropolitan areas. Participants agreed that MPOs did need to be supplied with funding estimates against which to program.

Project selection should flow from TIPs, requiring proportional sharing of obligational authority and development of funding levels based on authorizations to prevent overprogramming. States should undertake collaborative efforts to explain fiscal constraints, apportion-

ment levels, and obligation authority to MPOs and local entities through ISTEA conferences in each state. These conferences can lead to agreements on funding priorities and processes for distributing Surface Transportation Program funds.

Technical tools for financial planning and project evaluation must be developed to enable multimodal programming and prioritization. ISTEA requires immediate development of fiscally constrained and multimodal TIPs in priority order. The industry cannot wait for the development of sophisticated new tools. The near-term focus must therefore be on widely disseminating information on experiences in the industry, both successes and failures. The FHWA electronic bulletin board and federal, state, and local staff exchanges are two possible means of facilitating information transfer.

Special efforts are required to make the TIP process accessible and meaningful to the broader range of participants that must now be involved. The new requirement for public participation in TIP development suggests that states and MPOs must affirmatively reach out to involve people and groups in the process. Consequently, the process, which is arcane and complex, must be translated into meaningful terms.

Metropolitan Long-Range Plans

Long-range plans should define an integrated multimodal and intermodal transportation system. ISTEA calls for MPOs to define a metropolitan transportation system. The ISTEA required planning factors extend that system to include all modes, as well as the connections between modes.

Although ISTEA stipulated a realistic and implementable plan, this requirement should serve to reinforce accountability and stimulate advocacy, and not to constrain the long-range vision in a region. The new requirements on financial reasonableness in ISTEA force the long-range plan to move beyond a wish list to the difficult choices between system maintenance and enhancement and system expansion. If the plan can serve to focus a community's attention on these choices, it can also serve as a base for advocacy for the resources required to implement a new vision for the community.

to embrace land use, air quality, and other social and environmental goals. Although MPOs may not have the authority or the expertise to deal directly with all 15 required planning factors, ISTEA does require consideration of a broad array of issues and concerns in the plan. MPOs and states should collaborate to convene the partners that represent these interests and concerns so that the plan becomes more than a physical facility development effort.

Analytical methods must be developed to improve long-range transportation planning, particularly with respect to systems-level analysis; integration of transportation, airshed, and land use models; and the measurement of quality-of-life variables. Improvements in long-range planning are possible, given the state of current practice. Research does need to be conducted in system-level, multimodal analysis; improving the relationship among the various models, methods, and means of collecting data to support the models; and developing an understanding of customer concerns and needs. These user-based data needs are particularly critical with respect to quality-of-life concerns such as safety, community cohesion, aesthetics, and environmental balance.

CONCLUSION

From the first planning session for the Moving Urban America Conference, FTA and FHWA officials expressed their hope that the conference could result in some tangible guidance to them as the federal members of the partnership move to implement the new legislation. These findings are intended to provide some of that guidance. The findings are also intended to challenge states, regional agencies, transit operators, local governments, and advocacy groups to respond in a creative manner to the challenges presented in ISTEA. Most important, the findings reinforce the notion that the mobility needs of urban America can only be addressed through a concerted partnership that reaches beyond traditional roles and responsibilities to embrace a broader role for transportation in addressing a spectrum of key community concerns.

Complete reports of the conference workshops are presented next. The richness and variety of these reports indicates that areas around the country are responding to the new flexibility in positive and diverse manners, reinforcing the findings presented here.

Workshop Reports

State Transportation Plans

CHAIR: Gloria J. Jeff

RECORDER: Joan Borucki

PARTICIPANTS: John Bosley, Sarah C. Campbell, Anne P. Canby, A. Ray Chamberlain, Janet Cyril, Frank L. Danchetz, Rob Draper, Hal D. Hiemstra, Terry Kraft, Peter M. Lafen, Leon N. Larson, Ronald D. McCready, Bruce D. McDowell, John P. Poorman, Kelly K. Sinclair, Wayne G. Spaulding, Lou P. Venech, Paul L. Verchinski, H. F. Vick, Thomas R. Weeks

TITLE 23, SECTION 135, of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) requires each state to develop a long-range transportation plan for all areas of the state. The process for developing the plan must provide for consideration of all modes of transportation and must be continuing, cooperative, and comprehensive to the degree appropriate, based on the complexity of transportation problems. The state long-range plan must be developed in cooperation with metropolitan planning organizations (MPOs) and Native American tribal governments. States must provide all interested parties with a reasonable opportunity to comment on the proposed plan.

CONTEXT

In addition to the state plan, ISTEA requires MPOs to continue to

transportation plans (STPs) is new. State long-range plans must be coordinated with metropolitan plans. In addition, there are 23 factors that must, as a minimum, be addressed in the state transportation planning process. The factors cover air quality, energy, water quality, land use, land development, international border crossings, rural economic development, and tourism.

The main points from the workshop discussion on the actors to be involved, contents of and process for developing the long-range plan, and integration of the plan with other plans and programs are presented here as a table of contents for a state long-range plan.

TABLE OF CONTENTS FOR A LONG-RANGE PLAN

The actors and their roles in the planning process would be defined in the first chapter of the plan. This partnership should include transit interests, MPOs, local government, and environment and business groups in addition to the traditional "road gang." Citizen participation in state planning should be expanded to include those who have been left out of the process, particularly low-income and minority citizens.

The second chapter in the plan would be an outline of the statewide strategic policy issues and performance objectives. Workshop participants agreed that state long-range planning is both a top-down and bottom-up process. Strategic or policy issues were identified for the entire statewide transportation process and system. This would include a vision of where transportation should be in 25 years and what kind of performance objectives and measures of performance should be used to track movement toward achievement of that goal. The community would use the 23 factors that have been identified in the act as a basis for identifying those strategic and policy issues for inclusion.

The third chapter would deal with the broad concept of alternative strategies. In the definition of these broad alternative statewide strategies, the 23 factors would have to be considered, the performance objectives identified previously in this report would be used to measure or evaluate those alternatives, and the constraints associated with financial considerations would have to be considered. The workshop group wanted to be sensitive to financial considerations, but did not want dollars to drive the planning. Because financial resources are

Chapter 4 would involve the integration of the management systems that are called for in the act, the metropolitan long-range plan, and state implementation plans (SIPs). This is the point at which the process changes from a top-down to a bottom-up process. Once the policy issues and alternative strategies are laid out, MPOs should develop the specifics of their plan consistent with the statewide policies and performance objectives and add policies that are unique to that metropolitan area. That would be the basis for developing a metropolitan long-range plan. Inputs would include the management systems, and with the requirements in the Clean Air Act Amendments, planners should also consider what to include in SIPs.

Participants agreed that when the SIP, the management systems, and the metropolitan long-range plan were completed, they would then be resubmitted to the state, where they would be synthesized into the STP.

The individual components and the components as a whole would be evaluated to ensure that the policies and the performance goals are consistent. If a situation were to occur in which each individual area may, indeed, have been true to those policies and objectives, but they did not fit when they all came together, there would be an iterative process in which the state and MPOs would go back and forth until the statewide results, as well as the results desired within each of the metropolitan areas, were achieved.

One concern that emerged was the integration of the National Highway System (NHS) into the planning process and the emerging planning partnership. The NHS development process is well under way, but has not included all the partners who are vital to a healthy planning process. Workshops have already been held around the nation to kick off the designation process. The concern is that the development of state plans will occur after the development of the NHS and that the new partners will be brought in for plan development but not for NHS development. The development of the NHS is too integral to state planning efforts to receive so little attention or public participation.

The functional classification component of designating the NHS

consensus for approval and implementation of the programs and activities that have been identified in the plan.

Participants agreed that a critical step is to identify the stakeholders and involve them in the process from the beginning. Simply having stakeholders involved in the beginning, however, does not guarantee the consensus that is needed at the end. It is necessary to identify a specific strategy and then ensure that pragmatic steps are taken toward implementation throughout the life of the plan.

State Implementation Plans

CHAIR: Hank Dittmar

PARTICIPANTS: Carol T. Adams, Ronald D. Althoff, J. Barry Barker, Melissa M. Bender, Daniel Brand, Cynthia J. Burbank, Frank Carroll, James Q. Duane, Donald J. Emerson, Robert Fogel, Fred M. Gilliam, Janet S. Hathaway, Arnold M. Howitt, Kenneth H. Lloyd, Ian C. MacGillivray, Roderick D. Moe, Sr., Abbe Marner, Robert E. Paaswell, M. Susan Pederson, William L. Schroeer, Sonny Timmerman, Joanne M. Walsh

THIS IS THE REPORT of the workshop group that focused on air quality, state implementation plans (SIPs), and the process of conforming transportation plans and programs to the Clean Air Act.

Despite their differences, workshop participants were able to reach consensus on a number of key points. The group met three times in 2 days to discuss the context and partnerships in the air quality-transportation partnership, the process of preparing SIPs, and integration of SIPs with other required products of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Clean Air Act.

Background information on air quality requirements is provided, the evolving context of air quality planning is discussed, and challenges and findings in the air quality area are presented.

BACKGROUND

The Clean Air Act Amendments of 1990 (CAAA) were characterized by many attendees of the Moving Urban America Conference as being as significant as ISTEA in altering transportation policy for the nation. CAAA has succeeded in linking air quality considerations with transportation planning more closely than ever before. CAAA established this new linkage through two requirements: (*a*) states containing nonattainment areas must update their plan for attainment compliance with federal air quality standards (SIP); and (*b*) the requirement that metropolitan planning organizations (MPOs) demonstrate that their plans and programs contribute to the process of attainment (the conformity process) was strengthened. Although the workshop was focused on the preparation of SIPs, the group also discussed the conformity process at some length.

The Clean Air Act required that states update their SIPs on passage of the act. The act required that most states complete the following activities by November 1992: an updated emissions inventory, rules for reasonably available control technology for major emission sources, and interim procedures for assessing conformity. By November 1993, states are required to submit a SIP revision that documents a set of control measures to achieve a 15 percent hydrocarbon reduction by 1996, a permit program for stationary sources, certified emissions statements from stationary sources, an ozone attainment plan, adopted contingency measures, and an annual tracking program.

These requirements are imposed on air quality agencies at the state level, but the Clean Air Act also imposed obligations on MPOs to demonstrate that their plans and programs conform to the act. To do this, MPOs must demonstrate, during the interim period between passage of the act and promulgation of regulations, that the long-range plan and transportation improvement program (TIP) contribute to reasonable further progress toward attainment and that they provide for the expeditious implementation of adopted transportation control measures (TCMs) in the SIP. After the promulgation of regulations, the

AIR QUALITY CONTEXT AND PARTNERSHIPS

The first workshop session was focused primarily on definition of the actors involved on the air quality and transportation planning processes and on establishment of partnerships to develop the required products. The group's discussion in this area was focused on the lack of understanding between the air quality community and the transportation community with regard to the effectiveness of transportation measures to improve air quality and the lack of common planning practices and procedures. Important actors in the process were identified at the federal, state, and regional levels.

Federal

Workshop participants expressed the need for a partnership at the federal level involving the Federal Highway Administration (FHWA), Federal Transit Administration, and Environmental Protection Agency (EPA). Many participants expressed frustration that federal agencies involved in air quality often had conflicting priorities and offered conflicting guidance to state and regional agencies. The sometimes adversary relationship between EPA and FHWA was cited. The group also believed that federal agencies should join the partnership with state and regional agencies.

State

The key entities at the state level were identified as the state departments of transportation and the state air quality agencies, with governors and legislatures also playing important roles. Here again, a conflict was perceived between the policy guidance from the governor and state elected officials and the political support for tough air quality measures. The need for an iterative process between state agencies was also stressed, particularly with regard to the setting of targets and the definition of control measures.

Regional

interests. In government, the SIP and conformity process must involve federal agencies, state agencies, cities and counties, transit operators, ridesharing agencies, and regional air quality districts. Nongovernment entities that should be involved include employers, operators of stationary sources, shopping centers, environmental groups, special interest groups such as classic car collectors, representatives of low-income and minority groups, and the public at large. The workshop consensus was that these groups should be consulted from the outset from development of the inventory through identification and implementation of TCMs.

CHALLENGES

Workshop participants identified three major challenges that have been encountered in many parts of the country but still need to be addressed on a national level.

The first challenge is the uncompromising legal deadlines for the preparation and adoption of SIPs and the conformity of TIPs versus the uncertainty of the impacts of the decisions made by transportation planners. Put most simply, there is no hard evidence that TCMs can deliver the clean air improvements that are required from them. Increasingly, these measures appear to be a weak reed.

Members of the transportation community are thus asking elected officials to take political risks by adopting TCMs without providing the analytical underpinnings that give officials the confidence that TCMs will achieve the desired results.

This leads to the second challenge. Although the group believed that there is broad support by the public and elected officials for air quality, that support breaks down when specific TCMs are defined. Support for air quality does not necessarily translate to support for pervasive changes in life-style or measures with evident economic impacts.

The third major challenge is directly related to the first two. To get around political problems, one must include all the players in the discussion process, so that classic car collectors, environmental groups, big and small employers, and shopping center developers, to name just a few, are all involved in a trade-off analysis from the outset. Only in this way can one hope to keep the elected officials from being placed in a lose-lose situation.

Integration of SIPs

First, participants found that SIPs must be integrated into the planning process through amendment of the SIP or the long-range plan, if necessary. It is unfortunate that the deadlines do not allow for that because SIPs must be adopted by November of 1993 in most areas. However, the SIP as an air quality document cannot stand alone. Consideration of externalities, cost-effectiveness, mobility impacts, and equity are not included in SIPs in the way that they should be in the long-range plans. Consequently, there must be an integration; long-range plans must be sufficiently comprehensive and detailed to include consideration of SIPs. Consideration of the air quality community must also be included in long-range plans.

SIP Partnerships

The second notion on which workshop participants reached a consensus is that the development of SIPs must be a partnership process that leads to feasible and defensible transportation targets. This has specific implications. The transportation community and others must be involved in the air quality community's effort to conduct the emissions inventory and set targets for compliance so that when the targets are set for mobile sources, point sources, and area sources, it is understood that the targets are achievable and feasible within the various realms.

This consultation must take place so that one sector is not just given the remainding responsibilities after the air-quality community consults with the other sectors. This consultation process must happen at the state level because it is the states' responsibility to set those targets. The mobile source target should not be residual, set by assigning to mobile sources the balance of emissions reduction needed to achieve the federal standard, regardless of whether the resulting target is feasible.

also be developed through the same type of partnership process. MPOs should play key roles in those partnerships. The ability of TCMs to make dramatic air quality improvements is suspect, and both the air quality and transportation communities must work together to avoid over-promising in these plans. There was a soft consensus that the transportation agencies—the MPOs—should be designated to develop the TCM plans, but all groups need to be involved.

Resulting from a lack of understanding of each other's process, the fear on one side is that if the air quality community develops TCMs, it will propose plans that cannot be paid for, that cannot be implemented, and will not work. Similarly, the air quality community fears that if the transportation community is in charge, the plan will not meet air quality objectives, will not be implemented, and so on. Again, if all work together, the needed linkages will be made.

The group believed that the negotiated process and mediation ideas presented at the conference by James Kunde (see resource paper on partnerships by Kunde and Dale F. Bertsch) could serve as promising models for the development of the TCMs. These mediation efforts could be used to bring the advocacy groups and the business community to the table with local government and the regulators and engage all parties in a negotiation to win. The representative from private industry suggested that a focus on incentives rather than regulations would result in more business community involvement early on in the process when it is most helpful.

Conformity

The fourth finding is that EPA and FHWA officials must clearly define how the conformity process of long-range plans differs from that of TIPs. Air quality conformity for TIPs involves a direct quantitative comparison of emissions resulting from a program of projects versus a no-build scenario. This approach is well-suited for TIPs, which represent a commitment of federal funds to a specific set of transportation projects.

A similar approach to conformity of long-range plans would needlessly and fatally constrain the metropolitan long-range plans required by ISTEA.

The long-range plans required by ISTEA should include alternative scenarios, urban goals, investment strategies, and growth patterns. Their inclusion, however, is antithetical to the concept of posing a program of projects that lasts 20 years and modeling and conforming such a 20-year program of projects.

The group strongly recommends that the conformity regulations take into account the difference between a plan and a program to allow planning and alternatives in the process. Perhaps this can be accomplished by allowing unconstrained needs analyses and scenarios, which would not be subject to air quality conformity.

Research Agenda

Finally, a specific and important research agenda needs to be promulgated in the transportation and air quality area to resolve some of the uncertainty over the impact of required decisions. Such an agenda should include an examination not only of emissions but also of how motor vehicles operate on the freeways and streets of this country. Changes in fleet mix over time, the use of old, new, and high-emitting vehicles in the fleet, and vehicle speeds in actual operation should also be examined. Research should be undertaken on how high-occupancy vehicle lanes and bypasses, ramp meters, and signalization actually operate in the context of metropolitan transportation systems. Research should also be conducted on the impact of price and market variables on mode split, time of travel, and trip making over time. This broad research agenda on data collection and travel modeling is essential if transportation professionals are to continue down the current path: ever-more-finite analysis of the air quality and congestion relief impacts of transportation decisions along with an increasing focus on non-capacity-increasing approaches to problems.

CONCLUSION

After 9 hr of working together in probably the most divisive area in transportation—the transportation–air quality arena—this diverse group learned how to trust and communicate with one another. This

Management Systems

COCHAIRS: Roger L. Schrantz, Salvatore J. Bellomo

RECORDER: Joel Markowitz

PARTICIPANTS: Jeffrey Boothe, James Philip Boyd, Jeffrey R. Brooks, Donald H. Camph, Chester E. Colby, Ralph E. Comer, Andrew C. Cotugno, Frank L. Danchetz, Edward R. Fleischman, Myrna Griffin, David Hartgen, Kevin E. Heanue, Thomas L. Jenkins, David B. Keever, Robert Kochanowski, Linda L. Lawson, Michael D. Meyer, Debra L. Miller, Marion R. Poole, Sharon L. Reichard, William Roberts, George E. Schoener, Darrell K. Williams

ON THE CROSSCUTTING ISSUES, participants in the workshop on management systems strongly believed that an activist role is needed in state and local economic development to make the land use–transportation connection that is vital to the development of transportation plans and programs. States and metropolitan planning organizations (MPOs) must not believe that local governments are solely responsible for land use planning. They must become active participants in the transportation–land use connection because it has a great influence on quality of life, the environment, and mobility.

Second, participants believed that the products of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) [e.g., long range plans, transportation improvement programs (TIPs), state implementation programs (SIPs), and management system information] must be integrated. However, the aspects of each product that should be inte-

grated must be identified. This will require more discussion and research, particularly in the area of management systems.

FINDINGS

The six management systems called for in ISTEA are as follows:

- Highway pavement,
- Bridge,
- Highway safety,
- Congestion/mobility,
- Public transportation, and
- Intermodal.

Their potential interrelationships are shown in Figure 1. The circle was used in the figure because the logos of the U.S. Department of Transportation (DOT) and most state DOTs include circles. In the center of the circle, a focus group, a client or clients, is necessary. Transportation planners must understand how the six management systems in ISTEA relate to the clients (e.g., customers, transportation operators, or policy makers) they serve. Planners also must know how the management systems are interrelated.

Workshop participants discussed how the highway pavement, bridge, highway safety, congestion (which was broadened to include mobility), public transportation, and intermodal management systems might interrelate with clients. These systems also relate to each other in that information will be exchanged among them. Some interrelationships among the systems must be captured in serving various client groups. The management systems share a common set of necessary, general elements:

- Goals and objectives;
- Performance criteria and standards;
- A description of the types of policy, plan, program, and operational decisions that the system supported (decisions and decision makers should be identified);
- A description of the mode-specific (plant management) decisions and operational system decisions;

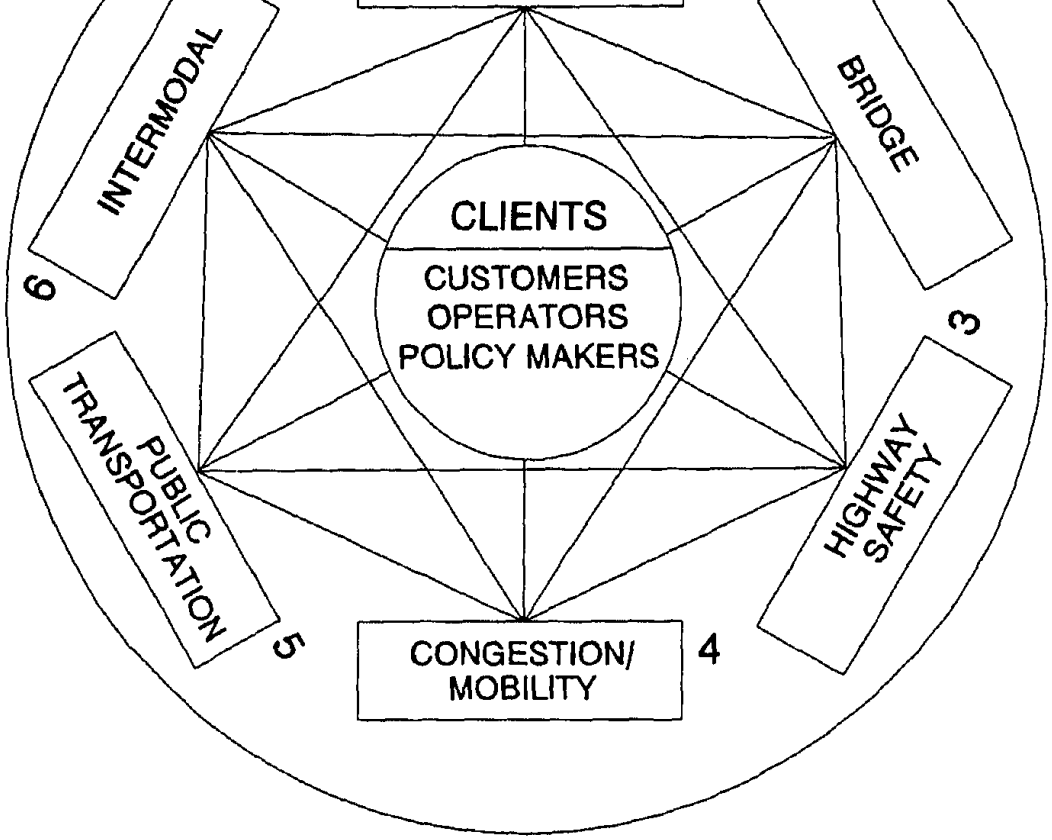


FIGURE 1 Integrated management systems.

- Data collection and inventory;
- Analysis based on performance criteria and standards;
- Alternatives to address existing and future problems and deficiencies;
- Testing of alternatives against performance criteria; and
- Information to aid decision makers in evaluation and priority setting.

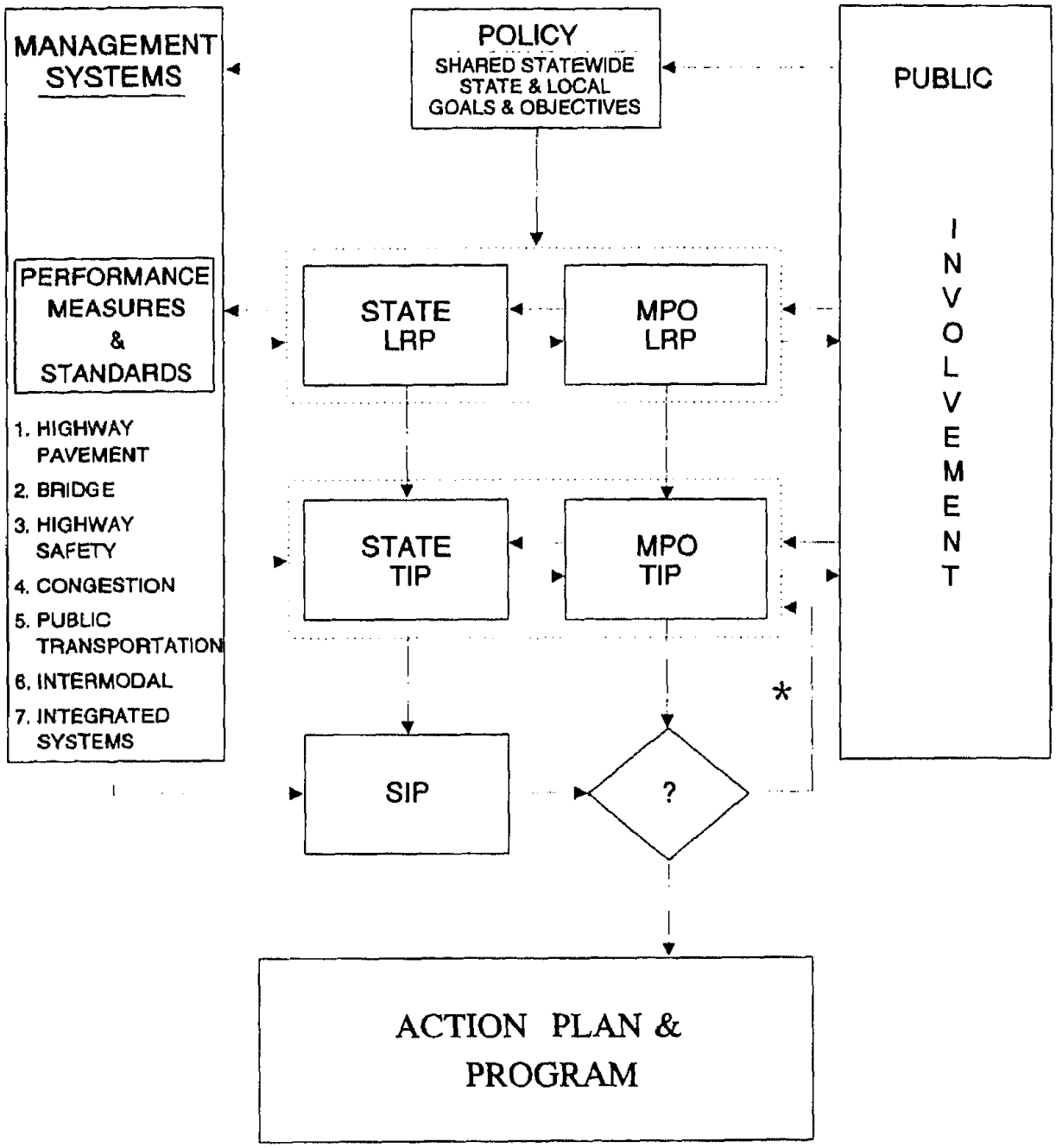
Although workshop participants acknowledged the importance of the information being used in decision making at various levels and the need to verify that the system was working to produce the information, they did not see the need for stand-alone plans for each area. The management systems should be reviewed to ensure that proper factors and processes have been addressed.

Participants agreed that the six management areas should be integrated to recognize the relevant interrelationships and that monitoring is a necessary function of the management systems.

Interrelationships Among the Systems and Products

With respect to the interrelationship of the management systems with the various other products of ISTEA and the Clean Air Act Amendment of 1990, the workshop group created a process (as shown in Figure 2) with the following general features:

- Shared state and local goals and objectives should drive the management system performance measures and standards and the state and MPO long-range plans, TIPS, and transportation components of SIPs.



- The goals and objectives should be formed with early and continuous involvement of a diverse group of the public that represents the customers to be served and that reflects movement of both people and goods.
- State and MPO long-range plans should be developed using a top-down and bottom-up approach with each state and MPO working it out on the basis of their individual situations.
- At the long-range plan stage, management systems should provide support, and there should be public involvement and feedback.
- The state TIPs and MPO TIPs should be developed on the basis of financially attainable plans, inputs from the performance-based management systems, and with interaction from the public.
- TIPs should then be incorporated in the SIPs, and a conformity check should be made with SIPs.
- Feedback, as necessary, should be made to TIPs or to stationary sources (including land use and area sources) or to both on the basis of consideration of cost-effectiveness.
- Public involvement should occur before an action plan and program are implemented.

Federal Guidance

Participants concluded that federal agencies should initially provide broad rule making, followed by specific guidance and workshops for each system. Of greatest concern to the group were congestion/mobility, public transportation, and intermodal/multimodal management systems. The highway pavement, bridge, and highway safety management systems are already well established.

Congestion Management Systems

Five key steps were identified for congestion/mobility management systems:

3. Examine, by user group, the mobility of people and goods for the systems.
4. Examine nonuser and external effects of each system (including air quality).
5. Define multimodal solutions to correct the most critical user and stakeholder (including nonuser) needs.

Advanced technology [e.g., intelligent vehicle-highway systems (IVHS)] and access management should be included in these systems.

Public Transportation Management Systems

For public transportation management systems, participants recommended following the five steps identified for congestion/mobility management systems. Guidance should be provided in the following six areas:

- Plant (mode-specific) management,
- Safety and security,
- Multimodal operations,
- IVHS,
- Intermodal operations, and
- Equity.

Intermodal Management Systems

Intermodal/multimodal management systems should also include the five steps identified for congestion/mobility management systems and should be focused on addressing the following topics.

- Passenger movement on multimodal systems,
- Freight and goods movement,
- Goods movement by market segment,
- Connection and linkages,
- Paucity of information,

Challenges

Workshop participants identified three challenges for management systems.

First, the vision for congestion management systems should be broadened. The systems should act as key driving systems and include the mobility concerns of various clients and customers as measured through monitoring of multimodal system service, the necessary market research on clients, and integration of air quality assessment and performance monitoring. This is particularly important for nonattainment areas and should be considered for attainment areas as well.

Second, staff members must think in multimodal terms about customers in order to move from the business-as-usual approach in some states and local areas.

Third, federal rule making should be sufficiently flexible to permit state and local governments to respond to ISTEA on the basis of circumstances in individual areas.

DISCUSSION OF FINDINGS

Congestion Management

Some conference participants believed that congestion management is almost on a higher level than the other management systems because of its functional nature. They believed that congestion management must be implemented immediately, before any long-range planning, simply because of the aspects of the requirements to measure long-range plans. It has to be done in a broad way, beyond what we are accustomed to thinking about existing system performance measures.

Much has been said about congestion management being measured by level of service, by traffic volume, but a number of conference participants believed strongly that congestion management, if done properly, must be based on another measure, such as mobility by client group. Plans must be based on user and market information as well as on simple traffic patterns.

Mobility is clearly a big issue. It is a way of examining congestion management that is different from a level-of-service measure. Transportation planners must be creative in developing measures to reflect

Conference participants asked whether the process shown in Figure 2 can be accomplished within a reasonable time frame; how many alternatives can realistically be evaluated for long range plans, TIPs, and others; and how the process can aid development of long-range plans, TIPs, and SIPs.

Many alternatives could be tested using these management systems and involving the public. However, testing often must be performed under time constraints. Limits are also imposed by the data that are available.

Planners will face the situation of "We haven't looked at enough alternatives. We need a model, but the model for air quality won't be ready for three or four years." That situation must be addressed with the basic principles of the best available data and the best available methods. The alternatives should then be examined at different levels—perhaps a screening level and then a more rigorous testing level.

The conformity issue is difficult. Coming to grips with how much of the burden we should bear for transportation and stationary sources and trying to reconcile that issue in a reasonable and cost-effective manner could easily prompt the excuse that we do not have enough time to get the job done. However, necessity is often the mother of invention, and these things can be accomplished if the process is kept moving.

Technical and political leadership is required to make the process work. A buy-in is required early in the process to get the leadership necessary to get the job done. These are all requirements of the act; it is just a matter of getting down to doing it.

One impediment to progress is endless questions. Analyses, instead of answering questions, may raise more questions. Planners are often asked to examine more alternatives than the technology can support, but we must get the people to the table. We have to get them to buy in. In this process, transportation professionals must also convince regulatory agencies to buy in early in the process and to go along with the data, methods, and alternatives.

This is a real concern—will all of this analysis paralyze or advance project implementation? The program must be customized, technical

Transportation Improvement Programs

CHAIR: Brigid Hynes-Cherin

RECORDER: Susan Mortel

PARTICIPANTS: Sharon D. Banks, Thomas J. Bulger, Donald H. Camph, Grace Crunican, John H. Foster, J. Charles Fox, Richard Hartman, Gary L. Jones, Barna Juhasz, Louis H. Lambert, Jean S. Lauver, Robert H. McManus, Michael D. Meyer, Robert G. Owens, Ron J. Posthuma, Robert G. Stanley, Joel F. Stone, Jr., Montie Wade

THE FOLLOWING IS THE report of the workshop on transportation improvement programs (TIPs). Each workshop session was focused on a different aspect of TIP development. The first session was focused on the context and partnerships surrounding TIP development. The second was focused on the products and processes involved in TIP preparation. The third included discussions of relationships and crosscutting issues that affect the development of long-range transportation plans, state air quality implementation plans, TIPs, and management systems under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA).

The report is divided into three segments. The first is a background synopsis of the legal requirements of ISTEA regarding TIP development and project selection. The second is a summary of the group discussions on partnerships and the TIP process, including areas in which the group may not have been able to reach consensus. The final section

presents specific consensus findings, which federal government officials should consider in offering guidance.

Before a review of the discussion, insights, and conclusions of the TIP working group, it is important to establish the context of the discussion. The overwhelming sentiment was that workshop participants were all impressed with immediacy, complexity, and enormity of what must be accomplished to adopt TIPs under ISTEA.

The task was one of immediacy because ISTEA required that TIPs be adopted by fall 1992. Incorporating complex new rules and players in such a short time frame required an enormous amount of work. Accomplishment of the task was necessary to retain federal funding. Although the other ISTEA requirements are equally important, they do not have the same sense of urgency.

BACKGROUND

The requirements for the preparation of metropolitan and statewide TIPs can be found in Sections 1024(h) and 1025(f), respectively, of ISTEA. TIPs are an integral part of the 3C (continuing, cooperative, comprehensive) urban transportation planning process, which has been in effect since the late 1960s. As such, TIPS build on the existing process.

Although minor variations apply to transportation management areas (TMAs) (urbanized areas with populations more than 200,000) and nonattainment areas, generally metropolitan TIPs are prepared by metropolitan planning organizations (MPOs) in cooperation with the states and affected transit operators. Comments are solicited from citizens, affected public agencies, employee representatives, private providers of transportation, and other interested parties. Metropolitan TIPs must include priority lists of all projects to be funded under Title 23 or the Federal Transit Administration (FTA) within each 3-year period and financial plans that demonstrate how the TIPs can be implemented. TIPs shall be fiscally constrained, updated at least once every 2 years, and approved by the MPOs and state governors.

States are to develop a TIP for all areas of the state. In metropolitan areas, the state TIP (STIP) shall be developed in cooperation with MPOs. Projects in the STIP must be consistent with long-range plans,

must have a reasonable opportunity to comment, and the Secretary of Transportation must review and approve it at least biennially. STIPs must be approved by the Federal Highway Administration (FHWA) or FTA, but copies of metropolitan TIPs should also be provided to the federal agencies.

In addition, projects have to be selected from TIPs for implementation. Project selection in metropolitan areas for projects involving federal participation is to be carried out by states in cooperation with MPOs and shall be in conformance with the TIP for the area except for those projects in TMAs [excluding projects on the National Highway System (NHS) and pursuant to the bridge and Interstate maintenance (IM) programs], which are selected by MPOs in consultation with states. Projects in TMAs, the NHS, or bridge or IM programs shall be selected by states in cooperation with MPOs. In areas of less than 50,000, the state selects projects in cooperation with the affected local officials for all programs.

Once projects are selected, implementation is dependent on available obligation authority, which for transit programs is handled on an individual application basis by FTA. For highway projects, obligation authority is granted to the state and, subject to FHWA approval, may be used for any class of eligible projects until fully committed.

GROUP DISCUSSION

Workshop participants were asked to share examples of how the transportation decision-making partnership has changed in their metropolitan areas. The ensuing discussion revealed a range of issues.

Current and Prospective Partners

Who is "at the table"? How can new partners be brought to the table? Local elected officials in a California community found that a consensus among elected officials was undone by voters because the decision-making structure had not included key interest groups, environmentalists, and the business community. The episode underscored the need to include all interested partners in the process, not just the

MPOs can and should use the traditional public involvement process to get more input to TIPs, but that is not the only solution. Obtaining increased involvement may require outreach and development of innovative mechanisms for input. Specific suggestions were to use transportation management association business contacts and general membership meetings or chambers of commerce to get more business input in the TIP. If there are numerous chamber organizations, a council of chambers could be used to channel input.

One clear message was to guard against elitism in participation by looking for a broad base. The constituency should not be defined by who is politically powerful or already a part of the process, but should be open to all interested parties. Otherwise, disenfranchised groups are often coalesced to undercut the process.

Partners are (potentially) everyone who has a stake in the decisions being made (e.g., trucking associations, airport representatives, employee groups, major industries, legislators, and disabled people).

Partners' Roles

In forming new partnerships, decisions must be made about the roles of the partners and their relative responsibilities and authority in decision making. Although they reached no conclusions, workshop participants discussed at length (*a*) the proportionality of voting membership on decision-making bodies related to policy and project selection and (*b*) dealing with advisory versus approval roles in the process.

MPOs are being encouraged by federal agencies to consider adding transit operators to their governing boards because such representation would be required if MPO redesignation occurs. The group discussed the relative advantages and disadvantages of adding transit operators as voting members of MPO policy boards. Such additions may be more or less controversial, depending on the areas, but they may make the process more open. Discussion also focused on the pros and cons of adjusting the membership structure of MPOs to include other new partners.

It was agreed that MPOs will need to establish voting and nonvoting working relationships that make sense to their areas. Partners need to be reminded that voting authority does not necessarily accompany

may also provide a means of reflecting the relative liability of various stakeholders.

The complementary roles of technical versus elected stakeholders must be acknowledged. The process requires technical input, and decisions cannot be made by elected officials alone. A forum for technical discussions must be coordinated and integrated with a forum for policy decisions.

The program and financial management knowledge that state departments of transportation (DOTs) have and often take for granted is not necessarily a current part of the knowledge base of MPOs. Under ISTEA, MPOs find themselves in a new and much more complex role. All the program development, management, and financial knowledge that DOTs possess must be shared if other partners are to have a meaningful role at the table.

Incorporation of TIPs into STIPs

Workshop participants discussed the fit between the metropolitan and statewide TIPs and the issues that arise when agencies must collaborate on a financially constrained product. The discussion covered whether states would or could take the MPO TIPs and fold them, lock, stock, and barrel, into STIPs. The heart of this discussion was the process by which states would financially constrain STIPs.

States have the responsibility to ensure that STIPs (with all the MPO components) meet ISTEA requirements, so there is no guarantee that metropolitan TIPs will be aggregated without change into STIPs. However, federal representatives indicated that if a state does not incorporate the whole metropolitan TIP, federal transportation agencies will probably want to know why.

It was agreed that if each MPO is given a target dollar amount to program against, the chances of the total STIP staying within the constraints of available funds are better. However, it was also agreed that the process must be iterative so that products can be recycled and improved if drafts are unacceptable to all partners.

A key difficulty with this approach is the timing of the air quality conformance finding on metropolitan TIPs. The air quality conformity rules require a specific set of projects to perform meaningful analysis.

out a set target or funding level, the conformity analyses would have to be redone if MPO programs are cut back.

Representatives of federal transportation agencies expressed a preference, and others agreed, for having the urban areas and states work out an acceptable relationship instead of having federal agencies impose minimums for certification.

It was agreed that states should provide MPOs and local elected officials with guidance regarding the fiscal resources they can reasonably anticipate for planning purposes. This is not necessarily an allocation, but perhaps could best be expressed as benchmarks. The idea is to let MPOs know how much money will be spent in their area so as to generate discussions about how the resources will be used.

Another recurring topic of discussion was on how MPO officials could influence how and where states use NHS and bridge system monies. A corollary issue discussed was whether MPOs could influence decisions to take advantage of the flexibility of transferring portions of the NHS to the state transportation plan (STP), or whether states alone have the option to choose that versus simply using all the money on one section of the NHS in one section of the state. Representatives of metropolitan areas stated that if they had a chance to influence the use of that money, they would probably recommend using it in nonattainment areas.

Priorities and Trade-Offs

Workshop participants next addressed the question of how partnerships will develop priorities and make modal trade-offs. The nature of MPOs encourages conservative, consensus-based methods and strategies. Building innovation and public-private partnerships within MPOs must be addressed. For example, TIPs and STIPs are built on stable, reliable sources of funding, which discourages innovation.

The task of developing multimodal project selection criteria to foster fair competition for funding is a major one. Congestion mitigation and air quality (CMAQ) funding under ISTEA provides an opportunity for the modes to compete on the basis of criteria reflecting air quality

development of the first TIPs, they expect to see improvements in the ability to deal with modal trade-off issues in subsequent iterations. Thus, the procedures that are developed for the first TIP can be improved over time, but the ability to address trade-offs must be developed in a timely fashion. Billions of dollars are being spent while new evaluation methods are being developed, which makes some of the partners anxious and impatient. ISTEA prescribed change, not business as usual.

The lack of final air quality conformity rules is perceived as an institutional barrier to the process of developing priorities for the transportation program. Without final rules, any program that is developed may ultimately be found to be deficient. On the other hand, the need to achieve air quality improvements may provide the push to deal with such topics as cross-modal subsidies. For example, even under ISTEA, it will be difficult to keep all buses in operation in some urban areas because of state and local budget deficits. As a part of TIP development, possibilities such as increasing road and bridge tolls to cover the operating costs of transit systems as a means of reducing vehicles miles traveled should be considered.

Other Issues

The state has a role to play in removing any barriers that might prevent the TIP process from working. For example, if a state has legislative reasons for not being able to develop the TIP in accordance with ISTEA, the state should take the lead in getting enabling legislation changed.

Each state needs a method to financially constrain TIPs, handle the issue of overprogramming, and deal with obligation authority issues. There are concerns that the methods used to deal with obligation limitations could, in effect, be used by the states to prevent MPOs from using their ISTEA allocations. There are also concerns that scheduling conflicts will arise when it comes time to meter out the money as a part of the project selection process.

States and MPOs must come to agreement on how obligation authority will be shared because the ways in which states grant or withhold obligation authority can influence the character and priorities of

TIPs were intended to replace the Section 105 reporting requirement under the old act, but Section 105 was inadvertently not removed from the new bill. FHWA has indicated that it will use the STIP as the Section 105 program.

The long-range programs of some states are long wish lists, and some MPO TIPs have not been constrained in the past. ISTEA requires financially constrained programs. The distinction between the long-range plan and the TIP varies from state to state, but becomes more important with a fiscal constraint requirement.

States will need to figure out how to deal with incremental investment on large, phased projects. This may be a problem for states that carry many large, expensive projects in their long-range programs.

Federal transportation officials expect TIPs to be arrayed in priority order by year. This could be a method of dealing with overprogramming. The projects at the top of the second year list could be substituted for first year projects if first year projects are delayed. This does not necessarily mean that projects must be ranked in numerical order, but a sense of priority must be apparent (e.g., high, medium, and low priority).

Some MPOs and states have agreed to allocation methods to distribute STP funds. Other states are considering competitive processes for the use of STP funds outside TMAs. Local units of government may fear competitive processes because they are concerned about receiving less money than they did under the old act.

MPOs generally favor suballocation because it provides a stable base to program against. Federal transportation officials are concerned that suballocation will result in money being left to accumulate from year to year because a local unit of government does not have an allocation large enough for a project. Suballocation schemes that allow money to remain unspent or be targeted toward a specific jurisdiction or mode are unacceptable.

CONSENSUS FINDINGS

Conformity

State and metropolitan TIPs must conform with each other. This will

Of key concern is the interrelationship of metropolitan TIPs and STIPs. Most intensely debated was whether metropolitan TIPs should be automatically incorporated into STIPs. One of the factors that makes that difficult to do is that key portions of the money—NHS, the bridge system, and in some states, CMAQ funds—are not allocated to metropolitan areas, and states do not provide suballocations. Without that information, it is difficult to program projects for sources of funds when the size of available resources is unknown.

At a minimum, states should provide MPOs and local elected officials with guidance on the financial resources that can reasonably be expected to be available during the TIP period. However, this would be a benchmark, not an allocation, and would give MPOs some idea of what projects are being considered for their areas and should serve to generate discussion on whether the resources should be used for other improvements.

Equally troublesome was the question of when the air quality conformance finding is made on the metropolitan TIP. If the finding is made before the STIP is adopted, is a new conformity finding required if the state does not include all the projects? This led to the conclusion that it is important that development of TIPs be an iterative process so that eventually metropolitan TIPs and STIPs are in conformance with each other and metropolitan TIPs meet air quality requirements.

Project Selection

Project selection should flow equitably from TIP requirements of (*a*) proportional sharing of obligation authority and (*b*) no category of funds programmed beyond authorization level.

The workshop discussion was centered on implementation problems once TIPs are approved, in particular, the effect of the obligation ceiling and outlay restrictions on the ability to select projects for actual implementation. It was acknowledged that even if metropolitan areas are successful in getting all their projects programmed in STIPs, implementation is not ensured. Most states use a first come first served basis for obligating projects in TIPs. Once the annual obligation ceiling is reached, even if a metropolitan area wanted to implement a pro-

The equity and air quality conformance implications led the group to conclude that project selection and programming need to be complementary and resulted in two specific recommendations. The first is that obligation authority should be applied proportionally to each of the categories of funds, with a deadline for local program sponsors to obligate those funds. After that date, the state can use the obligation authority wherever it deems appropriate in order to ensure that obligation authority is not lost in a given year. The basic thrust of the recommendation is that all partners must have a chance to use portions of that obligation authority. Otherwise, the validity of programming and air quality conformity will become a major issue.

The other recommendation is that no category of funds should be programmed beyond its authorization level. This should be done to ensure that each category of funds has an equal chance of being used under the obligation authority, consistent with the previous recommendation, and also to ensure that the program is fiscally constrained, as required by ISTEA, even though the authorized level might be considered optimistic.

Technical Tools

Another issue that workshop participants discussed briefly (although all acknowledged that it is a key issue) is multimodal priority setting and programming criteria. Technical tools must be developed to support multimodal programming. Improved financial planning and technical tools are needed to address issues such as prioritization and establishment of criteria to make multimodal trade-offs. Without specific data to justify programming decisions, subjectivity and feuding will be encountered in the process. The group recommended that technical tools be created to address these trade-offs.

Information Dissemination

There is an immediate need to disseminate information defining ISTEA implementation requirements and experiences. The workshop group

Right now, some players know a lot more than other players, and some players do not even know what questions to ask. Workshop recommendations are specifically directed toward getting basic information to all the players so they can be involved in the TIP process. States should undertake a collaborative effort to explain obligation authority, federal constraints, and federal funding categories as they relate to TIP development. States need to get early agreement and understanding of how obligation authority will be shared.

Specifically, each state should consider sponsoring an ISTEA conference for all stakeholders—MPOs, local elected officials, unions, the business community, community activists, and others who should be involved. The conferences should be attended by federal representatives, who could explain the difference between outlays and obligation authority, the impact on programming versus project selection, how FTA and FHWA grant processes work, the different categories of funds, which ones are and are not flexible, and who makes that decision.

Once that basic information is on the table and all players are brought up to speed, state officials should describe how they propose to apply the basic federal requirements. For instance, will they split obligation authority on a proportional basis or a first come, first served basis? State officials should then get input from the other partners on the proposal and on how they perceive their involvement in the process. Workshop participants believed this to be a key issue because if players do not even know what the rules are, they cannot get involved. In the past, states have often indicated that there is only one way to accomplish something, which is not necessarily true. If the basic information is available to all players, different approaches can be pursued.

Finally, it is imperative that the federal requirements and the state approach be summarized so that people who cannot attend the meeting have access to a resource document so that they can understand the process.

The group also believed that the federal government should take an active role in widely distributing this information so that it can be shared among states.

these approaches to the long-range plan process. A special effort must be made to involve nontraditional groups and customers.

Workshop participants expressed concern that, because the process is complex and many different rules apply, the public will be uninformed and unable to be involved. Public hearings are not the way to involve the public; they are not effective. Transportation planners need to start looking at other ways of getting input.

Metropolitan Long-Range Plans

CHAIR: Alan C. Wulkan

RECORDER: Therese McMillian

PARTICIPANTS: Jane Baker, Jeffrey F. Boothe, Bruce E. Cannon, A. Ray Chamberlain, David Clawson, Richard B. Davis, Rod Diridon, Mortimer L. Downey, Albert C. Eisenberg, Ted Hackworth, Julie Hoover, Thomas L. Jenkins, Christine M. Johnson, Richard A. Jorgenson, Ronald F. Kirby, Jonathan H. Klein, George T. Marcou, Dorn C. McGrath, Jr., Janet P. Oakley, Henry L. Peyrebrune, Les Sterman, Robert Thornton, Samuel L. Zimmerman

AN OVERVIEW OF THE requirements for metropolitan long-range plans as outlined in Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) is presented in this workshop report. Included is a discussion of the overall opportunities and challenges presented by ISTEA that influenced workshop participants' expectations for the plans. These expectations prompted the group's definition and discussion of key issues and eventual findings, which are presented here.

BACKGROUND

Metropolitan long-range plans are a new federal planning requirement created as part of ISTEA. Key characteristics of metropolitan long-range plans are as follows:

- They must cover a minimum of 20 years.
- They must identify facilities and services that make up a metropolitan transportation system (MTS) that is integrated, multimodal, and intermodal.
- They must include consideration of 15 planning factors outlined in ISTEA that cover a broad range of issues, including preservation of existing system infrastructure, energy conservation, land use, congestion relief, expansion of transit services and uses, freight movement, and other social, energy, and environmental effects, among others.
- They must be financially implementable under assumption of reasonably expected public and private resources.
- They must assess capital investment and other measures needed to preserve the existing MTS and make the most efficient use of existing facilities to relieve congestion and maximize the movement of people and goods.
- They must identify transportation enhancements, as specifically eligible under ISTEA.
- In nonattainment areas, they must integrate transportation control measures required in adopted state implementation plans (SIPs) to meet federal clean air standards.

ISTEA also specifies process requirements for metropolitan long-range plans. Metropolitan planning organizations (MPOs) are responsible for developing, adopting, and implementing the plans. The plans are to be updated periodically, on a schedule to be determined by the Secretary of Transportation. In nonattainment areas, plans must conform to SIPs to meet federal air quality standards, following specific procedures promulgated by the Environmental Protection Agency. Finally, MPOs must provide the public and other interested parties a reasonable opportunity to comment before plan adoption.

Because a long-range plan on a regional scale is a new requirement for most MPOs, its potential impact is perhaps best assessed in the context of ISTEA's overall changes to federal transportation planning and fund programming. From a metropolitan transportation planning point of view, some of the most promising ISTEA opportunities include the following:

- Flexible funding for transportation investments, which increases

life as an outcome of implementing ISTEA and the Clean Air Act Amendments of 1990;

- The opportunity to integrate land use and transportation planning decisions; and
- Enhancement of long-range planning in general, and with it, the opportunity to craft a vision.

Opportunities, however, are accompanied by challenges. Implementation of ISTEA, including development of metropolitan long-range plans, must overcome the following:

- Antiflexible thinking among the old guard transportation professionals and policy makers—an unwillingness to change from business as usual and share money and decision-making authority with new transportation stakeholders;
- Inability to implement new transportation improvements theoretically possible under ISTEA because of insufficient appropriations, lack of local matching funds for new federal dollars, or both;
- Difficulties in developing workable partnerships among transportation, environmental, and business and community players; local, regional, and state agencies; the public and private sectors; and elected officials, bureaucrats, and the general public (lists of new and traditional partners implied under ISTEA are presented in the section on participation and partnerships);
- Hurdles in achieving a common understanding of the stakes involved, particularly among nontraditional players and elected officials and leaders who may have incompatible agendas;
- Weakness of existing institutions, particularly MPOs, in terms of legal or legislative authority and technical capability, which hampers their ability to take advantage of ISTEA opportunities; and
- The tendency to involve the public in a cursory fashion instead of the meaningful way intended in ISTEA.

DISCUSSION TOPICS

Participants in the metropolitan long-range plan workshop spent considerable time exploring specific issues associated with the develop-

approach the issue or what should be considered in crafting a response to an identified challenge.

Scope and Impact of MTSs

Concerns were focused primarily on whether and how the required MTSs would be coordinated with other ISTEA systems—the National Highway System (NHS), congestion management systems to be developed by MPOs, and the other ISTEA state management systems for bridges, pavements, safety, public transportation facilities, and intermodal concerns. Participants debated the need to define an MTS as lines on the map, similar to the NHS. Because ISTEA clearly intends MTSs to be a focus of long-range plans, the group questioned the responsibility for their definition. Are MPOs to lead? Is this a new role? Who else is involved? The group did agree that defining mobility broadly is integral to the MTS concept, including the definition of infrastructure and facilities, transportation functions, and the interrelationships of MTSs to communities and the environment.

Financial Constraints

The group debated whether the financial parameters required in ISTEA result in a realistic and deliverable plan or a loss of long-range vision. On one hand, it appears that accountability is enhanced; financial limits will ensure balance between new investment and ability to operate and maintain the transportation system. A financially constrained plan is realistic and reflects what MPOs can do, as opposed to the wish lists that often characterized past transportation planning. However, many workshop members were troubled that the financial limits would eliminate planning from the equation, leaving only a 20-year program of affordable projects, with no guiding vision. After considerable debate, the consensus was that long-range plan financial constraints or parameters can most beneficially serve as powerful justification for securing new resources; this funding advocacy essentially becomes a

visionary platform. The plan versus programming dilemma can also be tempered by keeping financial allocations in metropolitan long-range plans fairly general. MPOs should reserve precise prescriptions for funding in transportation improvement programs

ISTEA Factors, Air Quality, and Land Use

The workshop group did not extensively discuss the nature and substance of the ISTEA metropolitan planning factors, but concentrated more on the process for considering and incorporating them. For example, should the factors be addressed as policy statements or specific actions in metropolitan long-range plans? Do MPOs have the authority and expertise to address the range of 15 factors, including issues such as land use?

Coordination of transportation with land use and other community concerns was a topic of special interest to the group. Participants conceded that integrating land use and other quality-of-life issues with transportation planning demands political buy-in on one hand and legal acumen to traverse the potential maze of consistency issues in transportation, land use, and air quality on the other. Although ISTEA does not grant new legal authority to MPOs, it does heighten opportunity for integration and coordination with land use. The group noted that authority to control funding has changed, and the criteria for considering other factors in the allocation of funds should be considered. In general, ISTEA, in combination with the Clean Air Act, has provided more specific direction to MPOs for integrating transportation with other concerns to achieve goals in addition to mobility.

As with land use, air quality coordination elicited varying opinions. The basic question was whether it is possible to effectively plan for both mobility and cleaner air. The answer was a definite yes; such planning is a requirement of ISTEA. The question of how was much more difficult to answer. Workshop participants suggested that MPOs take advantage of the flexibility to dedicate more funds to transit and other air quality transportation control measures. MPOs should take a more positive approach to the conformity process as part of long-range transportation planning. Greater coordination with land use changes

Participation and Partnerships

Workshop participants readily agreed that successful implementation of ISTEA hinges on broadly based participation by public agencies, special interests, and the general public. This is especially important for metropolitan long-range plans. One of the primary responsibilities of MPOs is to identify new and existing transportation partners and involve them in the planning process on an on-going basis. Input must be timely and early.

Public participation presents special challenges. The group strongly believed that public comment in the traditional sense is not sufficient. A more appropriate, comprehensive approach would

- Involve regional and subregional scale participation first,
- Dedicate more resources to outreach,
- Establish consistent structures (e.g., advisory committees for participation),
- Have informed, committed participants, and
- Be inclusive and integrated throughout the participation process.

The workshop group identified the following new partners under ISTEA:

- Customers (the direct and indirect "buyers" of transportation services),
- Employers,
- Users (all modes) (a subset of customers),
- Environmental groups,
- Nonauto and nontransit modes (e.g., air, bicycle, pedestrian, shipping, trucking),
- Governors,
- Urban, community, and rural coalitions,
- Transportation agency employees,
- Labor groups,
- Regulatory agencies,
- Design professionals,
- Emerging urban areas, and

who have new roles under ISTEA:

- Planners (transportation and community),
- Federal agencies,
- MPOs,
- State departments of transportation,
- Transit operators,
- Local elected officials,
- Public works personnel and engineers,
- Toll authorities, and
- Private financiers.

Technical Requirements

Perhaps the most pressing concern for those involved in the development of metropolitan long-range transportation plans is the availability of adequate resources and technical expertise. The following specific data and technical requirements were identified:

- Financial forecasts: public and private sources of revenue (reasonable assumptions must be established) and capital, operating, and maintenance costs must be included.
- Needs and impact analyses: demographic forecasts, travel demand forecasts, operations and systems analyses, emissions forecasts (for air quality conformity) are necessary.
- Data availability and reliability: good analyses requires good data.
- Staff capabilities: training, basic education, and research must come up to par with new requirements; some MPOs are lagging behind current technical expectations.
- Use of models: models must be reliable, understandable, and applicable to long-range plans.
- Expectations (state of the practice versus state of the art): transportation partners must understand what is actually available to MPOs and the constraints that technical limitations may have on long-range plans.

In addition, the following requirements for development of metropolitan long-range plans were identified:

- System-level demand and operational capabilities;
- Federal guidance on baseline analytical requirements (best practices guide);
- Dedicated, sufficient funding for technical resources and support;
- Methods to measure so-called soft quality-of-life characteristics (e.g., safety, community preservation, aesthetics);
- Linkages between system-level performance measures and project-level performance measures; plans must be designed to include performance planning (i.e., how the system works), and not just facilities planning (i.e., what gets built).

Process and Development

The workshop group discussed the need to coordinate metropolitan long-range plans with other ISTEA requirements. Although the relationship between the metropolitan and state long-range plans is obvious and important, there appears to be a major scheduling conflict: state plans may be developed before the component metropolitan plans. Because the long-range plan is a new requirement for most MPOs (California and other states have required regional long-range plans for some time), programming and funding projects before the plans are complete might result in the new ISTEA funds being entirely committed before planning is finished. Finally, integrating the assumption and outcome priorities of ISTEA management plans with the long-range plan should be a priority.

CONSENSUS FINDINGS

Group consensus was reached on major points in four main issue areas:

- Definition and impact of MTSs,
- Impact of financial constraints on development of long-range plans,
- Vision of long-range plans that many believed was mandated by the 15 ISTEA factors (but remained somewhat difficult to grasp), and
- Partnership and technical challenges that must be addressed if

Metropolitan Transportation Systems

In ISTEA, the first articulated requirement for long-range plans is that MPOs define the facilities that function as an MTS that is integrated, multimodal, and intermodal. Workshop participants debated whether this required identifying lines on a map, similar to the NHS requirement. Although no consensus was reached on that point, the group did agree that identification of a meaningful system that could serve as the centerpiece of the metropolitan long-range plan required that MPOs define (*a*) the physical plant, infrastructure and facilities across all modes, (*b*) the transportation functions of those facilities, particularly as they work together as a system, and (*c*) the interrelationships of MTSs with communities and the environment.

Many participants believed that this three-step process by default produced a tangible, identifiable system—specific facilities or corridors that would focus long-range plan capital investments and operational strategies to preserve existing MTSs and enhance their ability to move people and goods.

Financial Constraints

A key requirement of ISTEA is that long-range plans be financially constrained, that is, deliverable within assumptions of reasonably available public- and private-sector resources. An issue with the workshop group was whether "constrained" carries an overly negative connotation, that it somehow transforms long-range "planning" to "programming."

Semantics aside, the group agreed that the intent of the impact of this provision in ISTEA is to make the plan realistic and implementable, specifically that MPOs could be assured that sufficient revenues exist to operate and maintain existing and expanded transportation facilities, and thereby avoid the wish lists that are typical of many long-range planning efforts.

The financial boundaries, however, are not meant to constrain the region's vision for transportation services and facilities. Rather, by

facet of long-range plans in essence becomes the linchpin for the vision of MPOs for a better transportation future.

Long-Range Vision

Workshop participants extensively discussed the broader vision of the long-range plan. The group agreed that the 15 ISTEA factors imply that development of long-range plans must extend beyond a narrow transportation focus to embrace land use, air quality, and other social and environmental issues.

Intensely debated was how to do this effectively, without usurping existing authorities of other agencies. The following observations were made:

- In developing the plans, MPOs must work through the political process; local elected officials must reach consensus on a regional vision. If this is not done, the plans will carry no weight and certainly will not lead to the quality-of-life issues that all acknowledge are important.
- Legal reinforcements (e.g., legislatively required consistency findings between long-range plans and other plans) are extremely helpful in bolstering commitment to the political buy-in (particularly when the real trade-offs between regional and local choices make themselves apparent).
- ISTEA and the Clean Air Act in and of themselves do not constitute the sole mandate or responsibility for cogent, coordinated urban planning. However, the ISTEA and Clean Air Act mandates present a prime opportunity for MPOs to pursue this greater planning challenge, but MPOs and their fellow partners must take the initiative to do so. It would be far easier to shirk this opportunity and continue business as usual.
- Achieving consensus on and commitment to a long-range vision, under diverse and conflicting expectations among many different partners, is a difficult task. It is not one to be taken lightly (or by the politically fainthearted).

Partnership and Technical Challenges

Partnership, public participation, and technical capabilities are the

on-going, and educated. Last-minute, seat-of-the pants criticisms will not be welcome and are not helpful, particularly if the aggrieved party had the opportunity to participate early on and chose not to.

True participation must provide meaningful input to the development of long-range plans and meaningful response and feedback to the final product.

The workshop participants discussed several technical requirements for meeting the ISTEA metropolitan planning directives. Questions remain on whether MPOs are sufficiently prepared and trained in these technical areas, especially in financial forecasting and development and use of models that are reliable, understandable, and applicable to the problem at hand.

The following are specific recommendations:

- Clarify the appropriate scale of analyses for the long-range plan, which should be shaped by system-level demand and operational analyses. However, MPOs must also have the capacity to link system-level performance measures and project specific performance measures, especially in the area of air quality conformance.
- Provide federal guidance on baseline analytical requirements—a best practices guide for long-range plans. This would help to establish consistency among MPOs while allowing those that have greater technical capacity to make use of that in developing their plans.
- Ensure dedicated, sufficient funding for planning and analysis. Planning and modeling can no longer be viewed as a waste of time and be the first victims of departmental budget axes.
- Develop methods to measure the so-called soft quality-of-life characteristics—safety, community cohesion, aesthetics, environmental balance—that perhaps do not lend themselves easily to quantification, but nonetheless are equally important when assessing the benefits and impacts of metropolitan long-range plans.

CONCLUSION

If workshop discussion and debate on metropolitan long-range planning left one lasting impression, it is that the plans have no value if they do not produce results. The road from planning to implementation is

rocky and full of curves and potholes. The following actions should be taken to smooth the way:

- Remove administrative obstacles to funding; consider streamlining the federal project approval process.
- Include approval agencies, especially those with regulatory authority, as part of the planning process on an on-going basis; those agencies should not wait for a final plan, look for mistakes, and then send it back to the starting block.
- There must be continued emphasis on establishing a level playing field among highways, transit, and other modes, so that alternative transportation solutions may get a fair shot at being delivered.

Resource Papers

Issues Facing Urban America

Charles Royer
Harvard University Kennedy School of Government

I AM NOT REALLY sure why I am here to open this conference, except that it may have something to do with the devolution of responsibility to local officials in the new transportation legislation.

I am not a transportation expert. I am not a transportation planner. I am just a former politician at a place—the Institute of Politics at Harvard University's Kennedy School of Government—that someone from *Time* magazine referred to as a kind of Betty Ford center for recovering politicians.

Actually, when I was the mayor of Seattle, Washington, I got into transportation in a big way. I was forced to build a large and uncommonly expensive bridge. I did not really want to. I also tore up a perfectly lovely downtown in order to build a huge underground transit system.

An author who visited the city while the system was being built was asked by a reporter what she thought about the town. She said, "Well, it is a beautiful town. Why are you tearing it down?"

That was a good pertinent question in Seattle for several years. So, I am into transportation, at least in terms of those big projects, and the reason I am here is to talk a little bit about what I have learned about dealing with diversity and constituencies in order to get things done.

I have to tell you my bridge story. When I ran for office in 1977, I was the only one of 14 candidates who did not promise to build a bridge between downtown Seattle and West Seattle, a community of some 50,000 people who had to travel over an old, worn-out bascule bridge every day. There was tremendous traffic congestion, and the bridge, which had to be opened for all the port traffic going through, sometimes would not work. It was a nightmare.

Everybody wanted a new bridge, but there was no money for a new bridge. I told people that. I hadn't run for office before; I didn't know that you were not supposed to tell the truth.

I said, "We don't have the money for this bridge, and besides, if we build this bridge without thinking a little bit more about it, it might have some awful consequences for West Seattle. Your housing prices might go up, or the character of your fine little community might change if people could get over there in about 8 sec."

People thought about that. I got 54 percent of the vote in West Seattle.

A few months later the police dispatcher called the mayor one Sunday at about 4:00 a.m. and said, "Mayor, a ship has just run into the West Seattle bridge, and the bridge is stuck in the open position."

The voice on the other end of the line responded, "Well, call the mayor." The dispatcher said, "Well, I am calling the mayor." The mayor said, "No, call the new mayor." Some six months into my job, the police dispatcher didn't even know I was the mayor. He had called the former mayor at 4:00 on Sunday morning to inform him of this calamity.

He then called the new mayor, me, and told me that a ship had run into the bridge. It was a freighter carrying cement to a plant. You may recall the incident—the ship was called the Chavez.

The question for me—my first big transportation decision, my first military decision—was, "What should we do?" I said, "Seize the ship," which we did, for $5 million bond.

After that lesson, I built the new bridge. It cost $150 million, which seems like a lot of money for a bridge, and it isn't even pretty.

Building the transit tunnel taught me a little bit about diversity. I think we did a smart thing: we built the first leg of the transportation system of the future, buying with 1985 dollars the first piece of

Metro, which is a strong public utility with a good reputation, runs two transportation systems: one for people and one for waste water. Metro almost came apart over this issue of South African granite. That episode, and some high-handed management of the siting of two treatment plants on the shoreline, taught Metro a lot about diversity and inclusion. The failure to appreciate and include diverse groups and people probably cost Metro's executive director his job and surely contributed to a federal judge's finding that the governing body of Metro should be replaced because it was not representative.

My new job at the Institute of Politics is to inspire young people to get into politics. The Institute was started by Robert Kennedy in 1966 as a living memorial to his brother Jack, who was so inspired while at Harvard.

One of the ways in which we try to accomplish our job is to invite people from the political system to come to the institute for a semester to interact with the students and teach.

We invited two women last semester: Unita Blackwell, the mayor of Mayersville, Mississippi, and Maria Antonietta Berviozabal, a council member in San Antonio, Texas.

They taught me about infrastructure in a way that I won't forget. Unita is an African-American woman who grew up in Mayersville, Mississippi, and was basically excluded from the political system until the Civil Rights movement, when she became a pioneer and leader.

One of the reasons she got involved, she told students, was that cars and trucks going by on the unpaved road in front of her little shack caused the sky to be constantly full of dust, grit, and dirt.

Nothing was ever clean. Clothes were never clean. The laundry was never clean. The kids were never clean. It was just a dirty place. She used to walk down that road to city hall and stand in front of the building in which she could not vote and wonder why in the world she couldn't get a better road in Mayersville.

Well, she ran for mayor, and when she was elected, there was a fine road right in front of her house.

Maria Berviozabal lived in a barrio outside San Antonio, in which, as she describes it, they had a swimming pool just like the rich folks, only

system in that part of the city.

Maria also wondered why that was and what she could do about it, and when she became a member of the San Antonio City Council, she took care of that little problem.

What I am talking about here is a definition of politics—in human terms, in terms of diversity. I know people don't like to say that dirty word much any more, but we are talking about politics, inclusion, and just plain human activity in a time of rapid and disquieting change.

I want to address not only some things I know a little bit about, but also two conference objectives.

The first objective is to develop a better understanding of the context within which decisions are made in metropolitan America—I will call it America's regions—and how to make transportation planning relevant within that context.

The second objective is to recognize and include the opportunity for expression of the diverse interests concerned with and affected by metropolitan and regional transportation planning decisions.

Four primary forces will drive much of what can and will be done in the public sector during the next 10 years or so:

1. The continuing structural cost growth of subnational government and the growing economic impotency of the United States;
2. The increasing economic and racial isolation, not just in central cities, but in small cities and towns;
3. The deepening discontent with the performance of government and politicians at all levels—the antigovernment, antipolitics current; and
4. The growing mismatch between the geography of domestic needs and the geography of government, the primary means of meeting those needs democratically.

The extent to which you understand and adjust to these forces is the extent to which you will be successful in your work.

The first major force is cost growth and economic impotency. Government at all levels is strapped, yet government in the United States spends a horrendous amount of money. We spend $4,000 per capita per year on state and local government. That is a lot of money. That is

than 26 percent of American cities have negative budget balances. All cities have reduced capital spending, incremental annual budget growth, or both. They have cut back, raised taxes, reduced the work force, frozen hiring, reduced services, shifted services to other levels of government, and adopted other means of raising revenue.

Seventy-three percent of cities, according to the National League of Cities, increased fees and service charges during the past 2 years. Nearly 50 percent raised property taxes. Forty percent imposed various new fees and charges.

The New York Times reported late last year that the wave of new taxes and tax increases in state and local government compares to only two other periods in U.S. history—the depression and the early 1960s when the bills came due for the education of baby boomers. State and local taxes rose 10 percent in the last 10 years alone.

During the 1980s, federal dollars, as a percent of city budgets, went from 12 percent to 4 percent, and state contributions to cities declined by 2 percent.

An interesting way to look at this change in the decade is to look at a simple ratio. The defense dollar to the housing dollar ratio in 1980 was 7 to 1. In 1992, it was 46 to 1.

It is not that the United States is broke. As I said, we spend a lot. Germany will spend $1,500 per person (man, woman, and child) this year alone just to help finance the cost of reunification. If you have a mission and want to carry it out, spend a lot.

Well, we are spending a lot of money, but I am not sure that we have grasped the mission. You know the story at the federal level—a $400 billion deficit and $300 billion spent annually on interest on the debt alone. Add defense and Social Security, and the result is close to 80 percent of the budget. We seem to be hamstrung in terms of dealing with that.

States in particular, partners in the new transportation law, are frozen in the headlights of runaway health care and welfare costs, rendering states, which I think are much better regulatory, financial, and planning agents than the federal government, impotent precisely at the time they are needed.

State and local problems such as these are not likely to get better until and unless some major national problems, such as health care costs, are resolved. Poverty is the single biggest driver of local government costs

and racism.

The second major force is the increasing economic and racial isolation in the United States.

The Congressional Budget Office figures on disparity were on the front page of *The New York Times* recently. Almost two-thirds, 60 percent, of the growth in after-tax income of all American families between 1977 and 1989 went to the wealthiest 660,000 families, whose household incomes are at least $310,000 a year. Average pretax income of families in the top 1 percent went from $315,000 in a decade to almost $600,000 in constant dollars, a 77 percent gain in 12 years, whereas the income of middle or median income families increased only 4 percent, to $36,000. The bottom 40 percent on the income ladder actually saw a decline in their income during the decade.

Families in the top 1 percent paid less than 27 percent of their income in taxes in 1989, 35 percent in 1977. On the other side of the coin, and on the other end of the urban transportation system, 2 million more people live in poverty today than 2 years ago. One in 10 Americans receives food stamps.

Black males compose 3.5 percent of the college population and 40 percent of the jail population. Children, not the elderly, are by far the poorest, most endangered class, in this society.

I was at the German Marshall Fund the other day looking at a report on six cities—one Canadian (Toronto), three European (Frankfurt, Glasgow, and Rotterdam), and two American (Atlanta and Chicago). Reporters, academics, and politicians had traveled in a kind of intercultural, international team to these cities to prepare a "report card" on them. The Europeans were shocked at what they saw in Atlanta and Chicago. In the report, they stated that for the first time they recognized the frailty of the United States. The number of homeless people, the poverty, and the way people talked about the future shocked them.

People who will make up the work force in the future—85 percent of whom are foreign born, minorities, and women—are today falling through the cracks in the cities of this country, which ought to be some sort of message to us about better managing the future.

The third major force is the deepening discontent with politics and government. In 1964, 78 percent of the population agreed that most of the time they trust government to do the right thing. You can't get 78

had dropped to 36 percent, a tremendous disinvestment of confidence in the decision-making process.

At Harvard University's Kennedy School of Government, where we think that the government is something that ought to be preserved and worked and used and managed well and is worth going into, you ought to hear people talking about the House of Representatives banking scandal. You ought to listen to people who have changed their minds about term limits. You can almost hear them grinding in the same inexorable way toward some sort of imbedded dissatisfaction with government.

I talk to students all the time. Very few of them say they will run for office. A number of incumbent members of Congress will not seek reelection.

A training program consisting of 6 days of briefings on issues is conducted for newly elected members of Congress every 2 years at the Institute of Politics. Last time 41 people attended. This time we are thinking of building a new wing on the Kennedy School for the 100-plus new members. It is going to be a watershed year for change in Congress.

Politicians have had it with the system. A senior member of the U.S. House of Representatives was at the institute recently. He wanted to discuss what was happening with the destruction of the nuclear weapons in the former Soviet Union and about the work force of the future. He also wanted to discuss, as everybody in politics does, what television and politics will be like during the next 10 years.

He is a man who is discouraged about the process in which he works, a process driven by money in which one buys access and then flagrantly admits that that is the way the system works.

The fourth major force is the growing mismatch between the geography of domestic needs and the geography of government. The language of the European community, which includes a coalescing of interests the likes of which we cannot imagine in even some of our close-knit communities, does not include the word city. It includes economic regions and regions that cross international boundaries.

For the first time in U.S. history, more people live in the suburbs than live in the cities, and the jobs have followed them. In the last 4 years, Philadelphia lost 60,000 jobs. In suburban Philadelphia, job growth was up 600 percent over the city.

The 10 largest metropolitan areas, which contain 20 percent of the population, received 50 percent of the immigrants to this country between 1989 and 1991—and they didn't all settle on 1-acre suburban lots.

The National League of Cities recently conducted a survey on the disparity between central cities and suburbs. It found a dramatic correlation between the economic well-being of the central city and the health of the region. The extent to which these disparities in income between central cities and suburbs grow is the extent to which the economic region itself deteriorates.

Newark, New Jersey, is on the bottom of the list with a per capita median income of $7,600 in the city and $25,000 in the suburbs; for Boston, Massachusetts, the figures are $13,000 in the city, $30,000 in the suburbs.

In 1980, city income as a percent of suburban income was 89 percent. By 1987, it had dropped to 59 percent. There is a direct correlation between the economic health of the region and the economic disparities among its parts.

America's economic regions, in short, are becoming collections of isolated places, divided by race, culture, and class, with little civic culture across the broader community. With one or two exceptions, no government structure or means of governance is in place to allow for democratic decision making across the real community, and there is no constituency for these emerging regional communities.

The problem is that there are regional problems and local governments. There are huge policy implications for all of you in all of this.

What should we be doing to try to understand these places better, and what kind of policies should we be looking at that would help us to improve the governance of these places, to improve democratic decision making, to deal with the growth of these special governments that often are not accountable and extraordinarily powerful? How do you engage in transportation planning if you can't get people together around a table, or if the table gets unelected or thrown out because South African granite shows up in the project, or somebody challenges you on the

they were designed, not the way a politician—a mayor or a council member or someone—describes them, but the way they really work. We need to know a lot more about that.

The regions need to figure out some process to define themselves in terms of their behavior as an economy and their behavior as a community. It is important for these places to work better, meaning becoming more broadly accountable politically, more efficient in providing needed regional infrastructure and services, more inclusive of the increasing diversity, and more sensitive to equity issues across race and class lines. Maria and Unita, in other words, need their roads, and they need their waste water treatment systems.

We at the Kennedy School believe that even if it were possible, new metropolitan government structure would not cause these places to work better. No one says anymore that bigger is better.

Even in eastern and central Europe, where market economies are replacing command economies, attempts are being made to create an intergovernmental system that is decentralized down to the local level. Decision making is being decentralized.

That is what we are trying to do in education reform. That is what we need to be doing more of in terms of reforming our government in these important regions of the country. We need new coalitions and new approaches to governance—not to government structure, but to governance.

When I first was elected mayor, I used to get on a plane every month and go to Washington, D.C., to see my senators and come home with a federal grant, thinking I had done my job. I didn't even know my suburban colleagues who were mayors and council members. They didn't know me. They didn't like me much because I was on television all the time, and I was the mayor of the biggest city. When I tried to talk to them about going with me to the legislature, I found out that most of them were Republicans (I am a Democrat).

If I was short on friends, so was my city. During the last 5 years that I was mayor, I tried to build coalitions. The stake of the private sector is huge. The private sector is walking away from the central city. Business used to be the greatest advocate for regionalism. Now, increasingly, they are walking away from that fight. They are saying, "Why spend any time on this? It is just not working." The private/public governance

I would like to share one response to the question, "Well, how do you fix this?" It comes from an academic, former dean of the Kennedy School Bob Putnam.

Putnam studied Italian cities during most of his career, and he has written a book on them. He looked at cities that are Communist, Catholic, Protestant, big, rich, poor, chaotic, and tried to figure out why some work better than others. He found that it is not because of ideology, religion, or political structure. The one factor running through all of these cities that is a predictor of a high level of confidence in the way that city is operating is something called civic involvement. That is it. Nothing else predicts it.

It can be any kind of civic activity (e.g., quilting societies, Rotary clubs, etc.). If the level of civic involvement is high, then people are generally satisfied. They are up to that 78 percent level of confidence in government if they are part of the action. It is just as simple as that.

What is happening to this country now in the face of sprawl and increasing diversity is that the sense of community or civic participation has not expanded. In the almost exclusionary impulse to find security and safety and relief in some suburban enclave, we seem to have lost this sense of civic involvement on a broader community level. Somehow, if we can all work on getting some of that back, we will be making some progress.

The bottom line for transportation planners is this: I don't think you can build fancy transportation systems across some of these chasms that are opening up in American society. You just can't do it. You will have to find other work. You cannot connect burning downtown buildings with one-acre lots in suburbia. You cannot connect rich places with poor places. You cannot connect all white places with all black places. In your public enterprise—transportation—as in perhaps no other, it is so true that your end of the boat cannot be allowed to sink. The stakes are huge in figuring out how to keep both ends up so you can connect them with this wonderful talent that you all bring to bear on the problem.

Planning: The Challenge of Being the Glue

Michael D. Meyer
Transportation Research and Education Center, Georgia Institute of Technology

I HAVE BEEN ASKED to discuss the context of the recently passed Clean Air Act Amendments of 1990 (CAAA) and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). There is little question in my mind that both acts herald a new and different era in transportation planning and reflect trends that are found in many other facets of society. I have entitled my discussion Planning: The Challenge of Being the Glue for many reasons. First, I strongly believe that planning is the most important component of program and project development. It is that part of the intellectual process of understanding the future context of today's decisions that allows society to piece together some concept of appropriate and reasonable investment in the future. Transportation planning and the agencies and organizations that are involved in this "piecing together" need to coordinate the many different activities and policies that individually could foster, or

of the challenge that faces the transportation planning profession will be addressed. Discussed in the first section is the changing environment of transportation planning and how emphasis is once again on a planning-based decision-making process. The second section covers how planning must meet the challenge. In the third section, the following equation is discussed:

$$(LRP + TSM + TDM) + (TSM + TDM) * (\%TCM) = TIP$$

where

LRP = long-range plan,
TSM = transportation system management,
TDM = transportation demand management,
TCM = transportation control measures, and
TIP = transportation improvement program.

The equation is intended to convey the numerous items that planners and decision makers are now required to develop. It highlights the interrelationships among the many different planning activities that now must occur and the critical significance of TIPs, into which many of the planning documents must feed. The trend toward performance-based planning is discussed in the fourth section. The fifth section is focused on the institutional arrangements and capabilities necessary for successful planning to occur.

CHANGING ENVIRONMENT: THE PENDULUM SWINGS BACK

Every so often, Congress passes legislation that can be considered a milestone in a particular public policy area. Future historians will undoubtedly regard the recently enacted ISTEA and CAAA in such a light. Not only did ISTEA mark the end of the Interstate highway program, which began in 1956, but it greatly loosened the institutional, financial, and thus political framework within which decisions on transportation investment had been made during the past 35 years. More than $150 billion was provided by Congress to carry on the important work of building, operating, and maintaining the transportation infrastructure so critical to the U.S. economy and the quality of

American life. Of this sum, significant amounts were allocated to support mass transit, fund actions to improve air quality and enhance the environment surrounding transportation facilities, and provide seed money for research and demonstration of advanced technology applications to transportation. More important, however, ISTEA established a new program structure for investment of transportation dollars.

Federal funds once had to be spent only on projects that were eligible in specific program categories, but now many of the funds can be used for any transportation project. The federal program was once designed to provide uniformity of transportation investment from one state to the next, a necessity for a program such as the Interstate highway system; ISTEA now encourages states and localities to seek solutions to transportation problems appropriate to their needs and desires. The federal program historically emphasized transportation investment as an end in itself; ISTEA provides transportation funds to meet other societal goals, thus viewing transportation as a means of achieving some greater aim. The federal program separated the funds for highway and transit investment; ISTEA encourages that transportation decisions be made from a multimodal perspective (known as flexibility). The federal program once emphasized the construction of new facilities; ISTEA encourages better management and operational improvements of existing facilities with incident management programs, application of advanced technologies, and the like.

CAAA also provides a strong basis for a changing transportation planning focus in metropolitan areas in which air quality goals are not being attained. A long history of linkage exists between transportation planning and decision making and air quality planning. However, Congress has never before made the linkage stronger. Certainly, the transportation portions of CAAA will greatly influence the focus and scope of many transportation decisions during the next decade. With a stringent schedule of anticipated emission reductions from stationary and mobile source controls, decision makers in a significant number of areas will have to consider, and possibly implement, TCMs to demonstrate attainment. In addition, because of concerns about both attainment and maintenance, Congress has supplemented or reinforced the state implementation plan (SIP) revision process with specific requirements for nonattainment areas to periodically assess and mitigate on a

CAAA reflects Congress's concern with past and anticipated growth in VMT and congestion as primary causes of nonattainment. Congress viewed past failures to accurately predict and monitor these travel indicators as a main reason for overly optimistic attainment demonstrations following the Clean Air Act Amendments of 1970 and 1977. Regular determinations that transportation plans, programs, and projects conform to SIPs could be the greatest cause of change to how transportation agencies conduct their business.

The federal legislative context for transportation planning is important. However, the general environmental context of such planning was changing anyway, and ISTEA and CAAA are really a reflection of this change. In particular, five trends, which are discussed next, have characterized the transportation planning process in most metropolitan areas.

Transportation as a Means

A primary purpose of planning is to provide information to those responsible for making decisions regarding infrastructure and service provision. Whether professional planners and engineers like it or not, these decisions are often viewed by local officials as a means of accomplishing goals other than mobility enhancement or congestion relief. They are usually focused on enhancing a region's competitive advantage, reducing air pollution, or encouraging economic development and creating jobs. The implication of this trend is that transportation professionals must understand the linkage between transportation and these other objectives and be in a position to provide answers to questions on how to best achieve these objectives with alternative transportation investment scenarios.

Externalities

Similar to the first trend, the increasing importance in local decision making of the externalities of changes to the transportation system is a defining characteristic of transportation planning at all levels of application. Improvements in transportation do indeed have positive benefits for

pacts and who will be affected. The simple benefit-cost analysis of plan evaluation in the early 1960s has given way to more complex cost-effectiveness frameworks in the 1990s. Many of the provisions of ISTEA and CAAA provide additional entree into the transportation planning process for groups that have not traditionally been involved. These groups will probably expand even further concern about the externalities associated with transportation investments.

Capacity Versus Performance

The traditional emphasis of transportation planning has been on the provision of the necessary infrastructure to accommodate expected demand. Enhancing the capacity of the transportation system was the primary motive of many planning processes. A general trend in many planning disciplines has been toward maintaining performance of a particular facility or system by means other than capacity expansion. In transportation, this means that minimum levels of system performance can be established as target values and a multitude of actions considered to maintain this performance level. TDM, for example, is one nonconstruction means of maintaining a certain level of performance while still providing mobility. Performance concerns are central to both ISTEA and CAAA. ISTEA, in its requirement for several management systems, is tied into a performance-based approach. Certainly, CAAA defines acceptable performance as the degree to which air quality attainment is achieved, with the surrogate variable of VMT used to measure progress. The major implication to planners of a performance perspective to planning is the need for a comprehensive system monitoring and data analysis capability. This will be discussed in more detail later.

Think Globally, Act Locally

As we head into a world economic structure in which the success of metropolitan economies depends on their ties to international markets, the role of an efficient transportation system becomes of paramount concern. In particular, intermodal linkages, which can provide a strong

the implications of this trend is that goods movement in and through metropolitan areas will likely become an even more important concern in the planning process.

Transportation and Planning Technology

There has been growing interest in the application of advanced technologies to transportation systems. The likely impact of these technologies on travel behavior, patterns, and perhaps even urban form is still unclear. However, with the funding and policy commitment of ISTEA, it appears likely that during the next decade decision makers in more metropolitan areas will examine the possible applications of such technologies to their transportation systems.

In the area of planning tools, the history of transportation planning can be illustrative in understanding the likely evolution of the technical process. The early technical planning process was dominated by cumbersome, non-user-friendly computer models. As modelers were continually asked to provide information on more localized, environmentally sensitive issues, it quickly became evident that the models available to the profession were inadequate. Then the microcomputer revolution occurred. I strongly believe that the advent of microcomputer use in transportation planning saved the transportation profession from itself. The ease of use and relative simplicity of such approaches provided powerful tools to planners (and nonplanners) for addressing transportation problems facing communities. The next step in the evolution of planning will probably be the application of geographic information systems (GIS). Such systems provide an even more powerful approach for analyzing the data in a way that decision makers can understand. The increases in planning funds found in ISTEA will most likely be used in some metropolitan areas to update the data base and develop more sophisticated modeling approaches. Many of these developments will be based on GIS.

MEETING THE CHALLENGE

What impact could ISTEA and CAAA have on states and metropolitan

provides the opportunity to make major strides in transportation policy; CAAA clearly provides many metropolitan areas with the motivation to take such strides. In many ways, however, these opportunities require a different way of doing business and will likely run into the usual problems of institutional inertia and a conservative approach to change. However, states and metropolitan areas that exert leadership and take advantage of the opportunities presented by the new legislation can make considerable progress toward putting in place a 21st century transportation system.

Substantial opportunities exist in the five areas examined next.

Institutionalizing Flexibility

It has been estimated that if state and local officials choose to do so, $103 billion of the $151 billion provided by ISTEA could be spent on transit. How will the decision of how to spend federal dollars be made in metropolitan areas? What criteria will be used to determine the trade-offs among different transportation alternatives? New partnerships among the state, metropolitan planning organization (MPO), local officials, transit officials, and other major participants must be developed to examine the most effective way of institutionalizing this new flexibility.

Multimodal Transportation Planning

ISTEA requires that state departments of transportation (DOTs) develop statewide multimodal transportation plans. These plans are not simply to be documents in which highway, transit, rail, aviation, and port issues are examined separately, but rather a process and a plan in which transportation is viewed as an integrated system that is related to multiple societal goals and in which efficient and productive transfer of people and goods from one mode to another is emphasized. This requirement will be a particular challenge to states in which highway planning has traditionally been emphasized at the expense of other modes. This multimodal planning approach could, and probably should, characterize planning at other levels of application. In my opinion, congestion management systems, for example, should be developed on a true multimodal basis where appropriate.

ISTEA requires state DOTs to develop management systems in six areas: congestion, pavements, bridges, safety, intermodal activities, and public transit. It is too soon to say what many of these systems will be like. However, Congress is clearly telling transportation officials to develop the capability to better manage the transportation facilities and systems that currently exist. For congestion management systems, this will likely entail the consideration and implementation of regional incident management programs, coordinated traffic signal control systems, preferential lanes or other incentives for multi-occupant vehicles, and the like. Many highway agencies that have reputations for high-quality freeway construction will be challenged to become leaders in managing the road system that they have so effectively constructed.

Advanced Technologies

One of the likely growth areas in the economy and the transportation sector is the use of advanced technologies in vehicles and for transportation system control. States and metropolitan areas that use state-of-the-art technologies in transportation will not only improve the movement of people and goods in their region, and thus enhance their competitive advantage, but they also could become magnets for new industries and economic opportunity. ISTEA provides funds for research and demonstration of these technologies.

Transportation Finance

For years, one of the major barriers to a true national transportation policy was the way transportation funds were allocated for highways or transit, with little opportunity for substitution. ISTEA has changed all of that, and CAAA implicitly requires that a different approach to funding decisions be made in nonattainment areas. However, for states and metropolitan areas to take advantage of this new flexibility, they must also have similar financial flexibility for using their own funds. This suggests that the major means of state transportation finance should not be dedicated highway trust funds, but a transportation trust

fund that offers the same flexibility with state funds as that offered by ISTEA with federal funds.

College courses on transportation planning often begin with a discussion of the 3C (continuing, comprehensive, and cooperative) planning process. Perhaps we are now facing a 7C planning process, one that is continuing, comprehensive, cooperative, coordinated, conforming, consistent, and results in cost-effective programs and projects (for Florida, add an eighth C—concurrency).

EQUATION OF INTERRELATIONSHIPS

The planning guidance and regulations that will likely result from ISTEA and CAAA will increase the number and breadth of planning products (see equation in first section of this paper). Certainly, for nonattainment areas, CAAA stipulates that transportation planning and air quality planning must be clearly linked. TIPs are identified in CAAA as key indicators of serious attention to mobile air quality concerns in nonattainment areas. ISTEA and CAAA take the next step in the evolution toward making TIPs the type of document they were always intended to be—true program management documents that outline responsibilities, priorities, and funding streams. It is this impact on TIPs that most likely will be one of the lasting consequences of ISTEA and CAAA.

CAAA, in particular, uses TIPs to hold state and local decision makers accountable for the strategies that have been adopted to meet air quality targets. Transportation projects that are listed in the SIPs as measures to achieve these targets must also be listed in TIPs. In addition, progress toward their implementation must be shown for the transportation program to be in compliance. Such accountability will discourage metropolitan areas from listing measures that look good on paper, but really have little chance of being implemented.

A new concept of TIP is shown in Figure 1. As shown, the existing types of projects that are required to be in a TIP (e.g., capital invest-

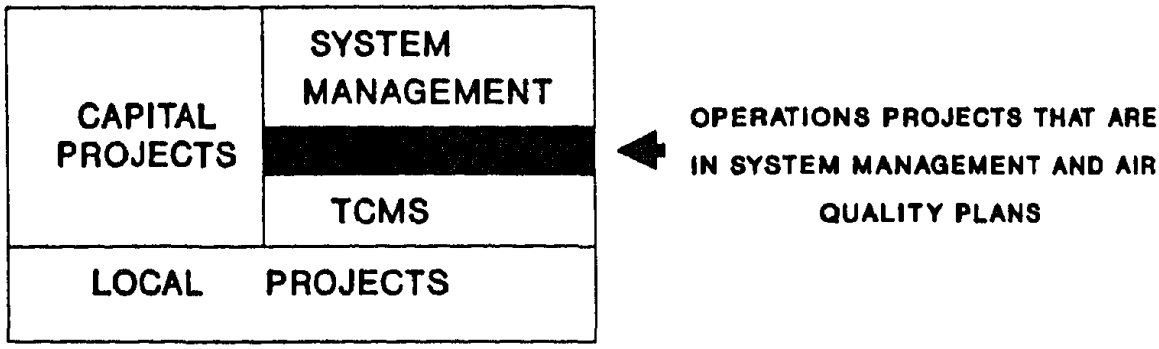


FIGURE 1 Modified TIP document.

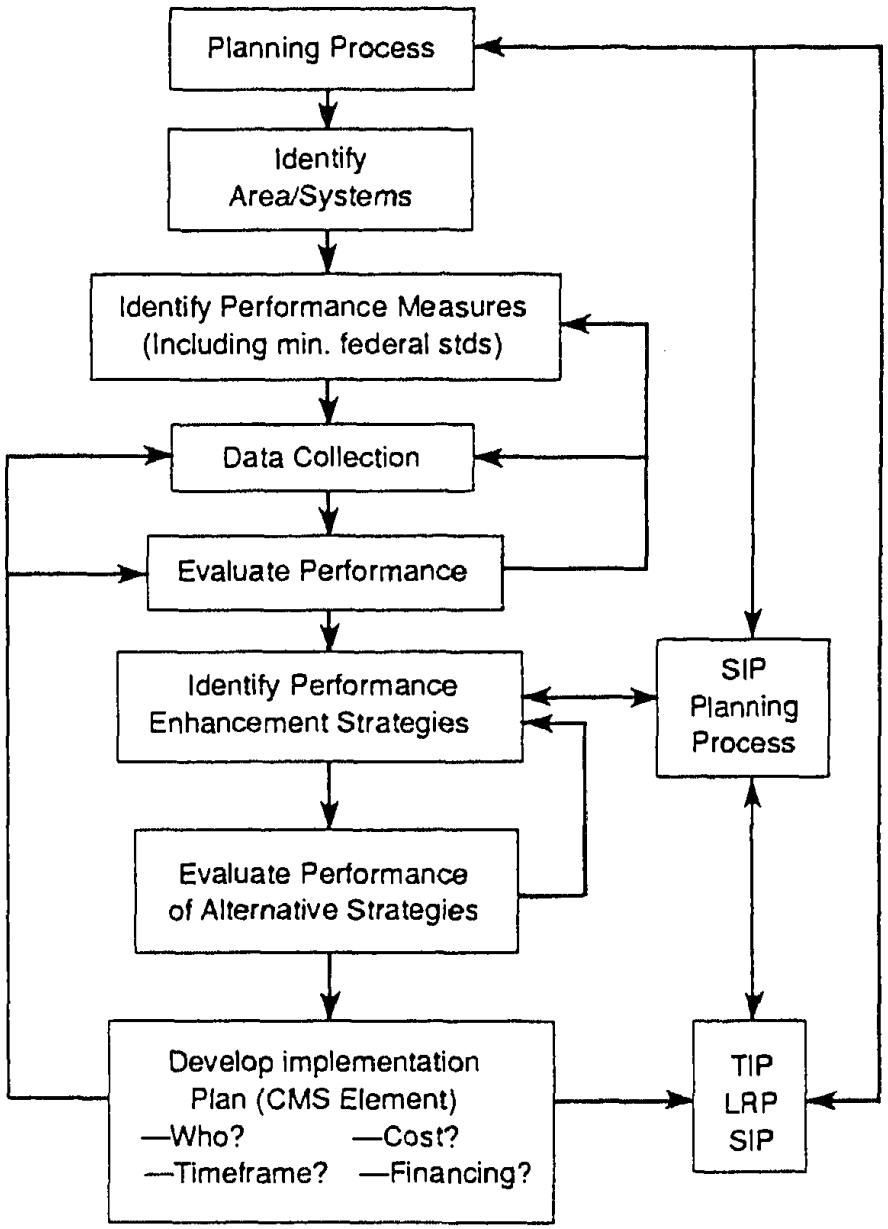
PERFORMANCE-BASED PLANNING

As noted previously, a distinguishable trend has occurred during the past several years toward performance-based planning and system management in many professional disciplines. The author of *Reinventing Government* argues that many of the most innovative and successful examples of good government in the United States are cases in which the final product of government service is performance, not units of production. In transportation, several examples of performance-based planning have occurred in the general area of site impact analyses or impact fee determinations. In such cases, the community determines that a certain level of service is desired on the area's road network and that permission to develop new land with the resulting increase in traffic demand must be contingent on steps being taken to maintain this level of performance.

Taking this concept to a systemwide level is challenging. The first step is to measure performance. Some work has been done on this topic in the area of systemwide congestion indices. Assuming that performance measures can be identified (and agreed to by local governments), the next major challenge is developing a system-monitoring program that collects and analyzes system performance data that can be fed back into the planning and decision-making process to allow steps to be

possible approach to developing a congestion management system is shown in Figures 2 and 3. Note in each the need for determining performance standards, the targeted systems, and system-monitoring capabilities. The VMT estimations that are required by CAAA are another indicator of system utilization that acts as a surrogate variable for air quality performance measures.

A key issue for MPOs and state transportation agencies during the next several years will be the development of comprehensive strategies for the collection and analysis of system performance data.



LRP = long range plan
SIP = state implementation plan
TIP = transportation improvement plan

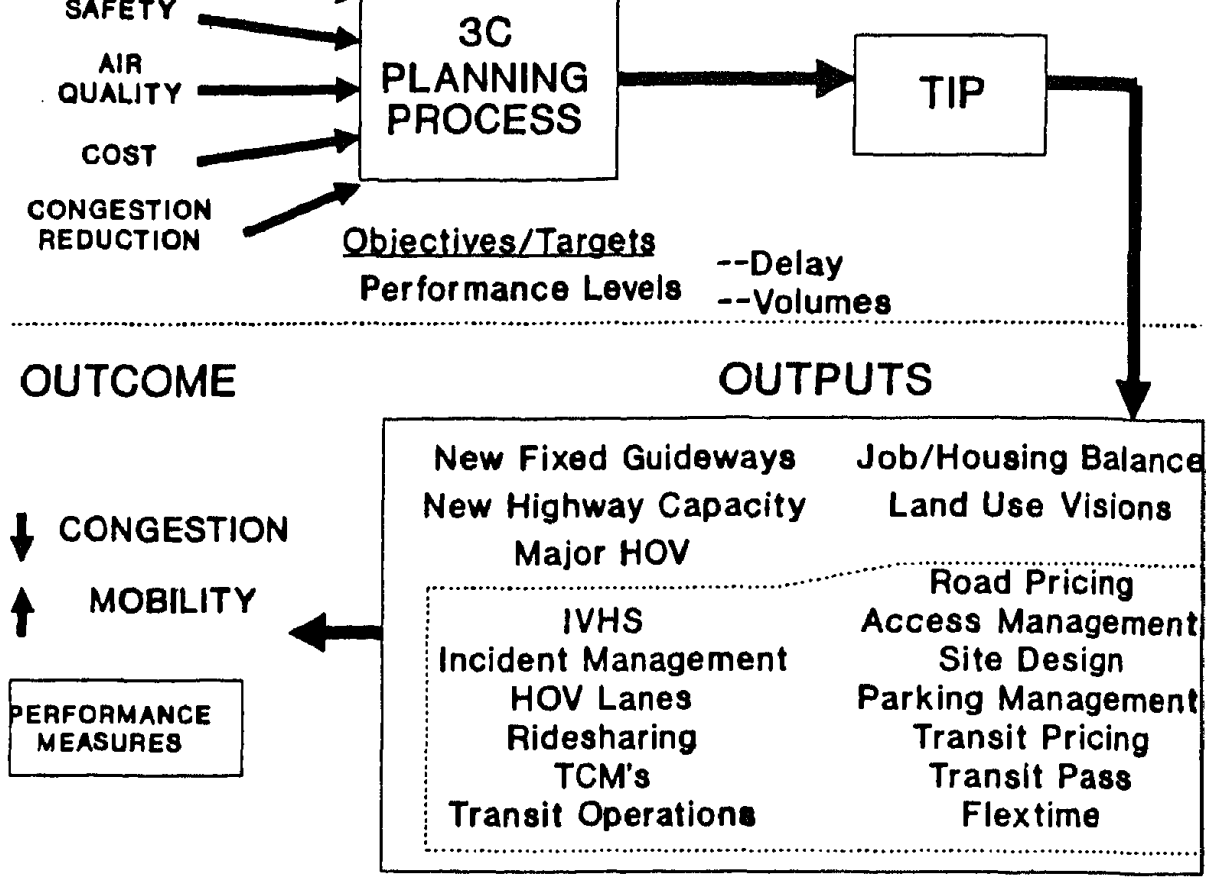


FIGURE 3 Relationship of congestion management to transportation planning.

INSTITUTIONAL CAPABILITY

Several years ago, I conducted numerous case studies of metropolitan area responses to the TSM policy of the U.S. DOT. Through this work, I learned that the institutional response to such policy changes as TSM involves three steps. The first is the resolution of issues of turf (i.e., the organizational and political negotiations that empower one group or another to develop a strategy in response to the initiative). The next step is to address issues of process. Once the process of response is determined, the involved groups can deal with the third step and true intent of the initiative: issues of substance. Although simplistic in its approach, this simple model of change can be used to explain why some actions have succeeded, whereas others have failed. If turf issues are not resolved, it is unlikely that participants in the process will reach a discussion of process. If the process of change is not agreed to, it is

Both ISTEA and CAAA suggest that the institutional structure for transportation planning and decision making will have to be changed for local officials to respond to the requirements. It is not business as usual. One example is the requirement for MPO boundaries to correspond to nonattainment boundaries (unless the governor recommends otherwise). Having been a participant in an MPO process and being aware of the often delicate balancing of interests that is reflected in their governing bodies, I think that in many metropolitan areas of nonattainment around the country the attention of decision makers during the next year will be focused on the reasonable and equitable expansion of MPO policy boards. Using the three-step model just described, it is unlikely that the planning process can really be institutionalized and that project and program decisions can be made until these issues of turf are resolved. Other institutional issues that will be important in some metropolitan areas include the following:

- Incorporation of operations and implementation of agencies into the MPO structure;
- Implementation of the flexibility of funding transportation projects;
- Relationship between air quality agencies and constituencies and transportation agencies;
- Role of state DOTs, especially in multimodal planning and IVHS implementation;
- Role for private entrepreneurs with transportation ambitions;
- Intermodalism;
- Implementation of often controversial TCMs; and
- Development of the management systems required by ISTEA.

CONCLUSIONS

One measure of good public policy is the degree to which it responds to opportunities and challenges. In the transportation area, we are truly at a crossroads. The decisions made in response to ISTEA and CAAA could set the foundation for transportation decisions that will be made during the next several decades, just as decisions 35 years ago in response to the Interstate Highway and Defense System Act resulted in the Interstate highway system. However, this time, the federal govern-

groups now involved in transportation are necessary for the success
the transportation programs of states and metropolitan areas. In som
cases, such leadership will be required to provide a fundamental r
examination of the role of transportation in the metropolitan area. Th
is the major challenge for transportation officials as we prepare for th
21st century.

SARAH C. CAMPBELL The Surface Transportation Policy Project
a broad-based organization of the "watchers." We are the groups th
have traditionally been outside the process, and now I strongly belie
that the Intermodal Surface Transportation Efficiency Act of 199
(ISTEA) has given us the right to come in and to sit at the table.

It is odd for me to feel that I am a watcher because I have worked
the state, federal, and local transportation levels for more than 16 year
but many people inside these agencies play the role of watcher.

It is time for us to look forward to the quality of performance and th
outcomes. We must recognize that ISTEA will be different from pa
laws because it is not just a reiteration of the 3C (continuing, cooper
tive, and comprehensive) urban transportation planning process.
number of specific provisions require a more open approach.

I would like to reflect on the comments of Jack Kinstlinger. As I
pointed out, many good resolves came out of previous conferences, b
somehow our products did not change.

ISTEA provides a new mandate and specific requirements as well
some general requirements and choices. The specific requirements ha
forever opened up this process. One of the things that improves gove
nance and will improve the outcome of our transportation process
and, ultimately, our products, is openness. This is no longer a close
union shop.

The Surface Transportation Policy Project and the American Institu
of Architects recently held a conference on New Perspectives, Ne
Players, New Programs. We did not want to use the word "products
and we were looking for another "P" instead of a "C." I would like
point out a few of those perspectives and a couple of the issues th
came up in describing new players and old players. They are compl
mentary to this conference and to some of Michael Meyer's remar
about the new aspects of the process and the way we have to look
things.

should tell us that we do not want to do that again. We do not want to go there again. We do not want to create the kind of divisiveness within our communities that resulted from many past transportation policies.

Certainly there are plenty of other factors, but any time you try to do something in isolation from the rest of the population, the rest of the population will still be affected. I think we are living with the results of some of those decisions in a way that we don't like.

If one examines transportation statistics before the Interstate system in terms of the number of people who walked to work, or used transit, or lived close to their jobs, both land use and transportation were different. The automobile and the rush to accommodate it so completely have truly changed society. Transportation planners should examine the collective effect of the past 35 years to be able to determine where to go in the future.

Second, a number of speakers at the conference said that it is time to link clean air objectives with transportation plans. "Conformity" may be a new word in the process, but it is an important one. Another perspective that was voiced at our conference was the determination to fund the current pipeline of products. This is kind of a flip side of the other perspective.

This determination is quite understandable. If you have been living with projects for a long time, there are a lot of vested political, financial, institutional resources in those projects. An important question that must be addressed, however, is whether those projects serve the new vision and new mandates.

Another topic addressed at the conference was the need to finally figure out how to make the transportation and land use relationship work. Here we go again, but this time we really do need to figure it out.

Other participants believed that the project selection process should not be changed. There was a fair amount of hostility about that on both sides because others wanted to assert their new power now and did not want to wait through some type of logical transition phase.

In short, there were calls for change, and there were plans to go slow. I think that by the time we get through this conference we will be able to bring those different perspectives together. I think our conference served to highlight those issues, to put them on the table. Now I hope that we can use this opportunity of having a diverse group of people together to try to resolve these issues and bring these perspectives

Because one of the themes of the conference was new partners, the objective was to try to bring diverse groups together to talk creatively without hostility. By the conclusion of the 2-day conference, however, it became clear that, no matter who was speaking, only one group believed they were the old players' group.

There should have been several of these groups. For example, metropolitan planning organizations (MPOs) had been written into the law for at least 20 years, but they believed they had been locked out of the process, coopted, bought off, or strangled by greater forces.

Transit operators said that they had been dealing from a position of financial weakness and were not sure how much had really changed with the law. They were the skeptics in the crowd.

The business community also has had a role in this process for a number of years, but were not sure what this meant. They did not know whether they were old players or not.

Although some public interest groups have been involved in the past, by and large they did not have a formal role. There was nothing that they could assert in terms of the law, with the exception of project-specific issues, particularly around environmental impact statements.

That is the group that I have represented. Some of the others (e.g., local officials) were surprised to learn that they should have been old players. They did not realize that MPOs were supposed to be composed of local officials and not be independent bureaucracies. This was news to quite a few people, who consequently thought of themselves as new players.

We have been hearing a lot from state legislators who, in fact, are quite interested. The question for all of us is whether state legislators are players or just the sugar daddies who come up with the dollars for the pork.

Another set of players is governors. The law is clear in speaking to the role of the governors, yet already we have talked about the delegation of that authority. Is that really what the Act intended? Are the governors themselves supposed to be players? State and local agencies are important constituencies. If transportation planners are to take a serious cut at the 15 considerations for metropolitan planning and the 20 or 21 for state planning, departments of natural resources, air boards, energy officials, historic preservation officers, and others will have to be involved. They have been interested in the process for a long time, but

I would like to respond to Meyer's point about the need for better transportation and land use models. Frankly, current models are inadequate. Congress did not arbitrarily put a lot more money into planning and management. Let's use some of that money for models.

I know some people will not hold this view, but putting the planning money aside and using the increase in research money for intelligent vehicle-highway systems is a travesty, given that we have not yet been able to reach some other basic considerations because we do not have even basic data.

For example, in the region that I am from, traffic cordon counts every year used to be done. In 1982, the counts were changed to every 2 years. Now they are conducted every 3 years. After 3 years, important information is being missed. It is that basic.

I also think that the U.S. Department of Transportation (DOT) ought to put some fast money into appropriate models for financial planning. The new requirements are specific for both states and metropolitan areas in identifying financial resources and financial feasibility. U.S. DOT officials should also examine the administrative mechanisms that keep the playing field among the modes uneven. I am not just talking about transit versus highways; obviously, there is a long list.

Neal Pedersen from the state of Maryland told participants at our conference that one of the most difficult tasks in his job (as Maryland DOT Planning Director) is to try to have an honest multimodal plan for a corridor, given that two completely different sets of requirements and funds must be reconciled in that type of planning.

The new law provides some basis for change, but the changes should come with the administration of those programs from the Federal Transit Administration and Federal Highway Administration.

I don't think we can expect states and localities to do all of these things unless they get cooperation and support from federal administrative agencies.

We should take advantage of the fact that we have been assembled together as a diverse group and try to flesh out this vision.

It is hard to know how to get somewhere if you do not know where you are going. I think for the last 35 years there has been a clear vision, a single vision, a unitary vision by and large, that this program has

The law gives us the opportunity. It is time for us as transportation professionals and as leaders in fields related to transportation to flesh out alternative visions for the transportation system to serve in the future.

JAMES Q. DUANE Today, as we start on this new course, we must take a close look at the possible effects of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and not rush, as we did 35 years ago, into what will possibly be another cultural revolution.

We are asking and placing emphasis on metropolitan planning organizations (MPOs) to carry out a cultural revolution. I have a couple of questions to ask. Those of you who have transit boards, how many of your transit board members ride together to the meetings? How many of you in state departments of transportation (DOTs), MPOs, and transit authorities, and how many of your employees ride share, car pool, and ride transit?

There are 55 employees in our office. Two of them ride share. Everybody else drives alone. We are looking at a new office facility, and the primary concern of the staff is parking.

That will perpetuate what we are trying to do, in trying to reduce the number of vehicle miles traveled (VMT), and that is the overall intent, by the way. We talk a lot about all of this, but we must reduce VMT if we are to meet the goals of the Clean Air Act and ISTEA.

Let me tell you a little bit about where I am from. I am from the Ohio-Kentucky-Indiana Regional Council of Governments, to my knowledge the only tristate MPO in the nation. If you want to talk about the difficulties of trying to bring about regional economy, you should try to work in three states. I was really struck by the governance issue; we will get nothing done in transportation unless we solve the governance issue. Let me give you an example.

We meet as an MPO. The three states and their cities and counties cooperate well on transportation issues. However, the Kentucky legislature recently passed a new economic development incentive act that completely tore apart our region because it looked like it was going to

solved.

A third issue is concurrency. I was executive director of a regional planning council in Florida and was struck by the 7C planning process mentioned by Michael Meyer. If you want to have a real exciting life in Florida, deal with the eighth C—concurrency. MPOs will have to deal with concurrency in some form. Transportation planners will have to examine the doctrine of when levels of services get delivered to citizens relative to when new projects come in to meet them (e.g., shopping malls).

There are some old elements in the new MPO plans—land use and others. New elements include energy and socioeconomic considerations. Let me provide some concepts for new MPO plans.

They must be balanced. They must be balanced among the modes, which will be extremely difficult. They must be balanced with land use, development, and transportation considerations, and they must be balanced with social, economic, environment, and energy considerations. All those balancing acts will have to take place, and it is going to be difficult to do.

MPO plans must also be internally consistent. One transportation policy cannot negate or affect another policy within the region. Transportation planners must ensure that no element, policy, or direction negates or significantly changes another policy.

The plans must be conformed to fiscal constraints and Clean Air Act constraints.

The plans must be balanced. That is new to us. They must be internally consistent. That is completely new to MPOs. They must meet the requirements of, or conform to, ISTEA and the Clean Air Act.

I came to an MPO in which local officials did not know they were players in the transportation planning process. They have now learned their role and are attempting to open up the process.

MPOs are where all of this is going to happen. I have heard a lot of talk about MPOs, but as Sarah Campbell mentioned, few MPOs were represented at the Surface Transportation Policy Project meeting.

MPOs have been left out in the past, and they continue to be left out. The biggest issue facing MPOs today is that they are the new partner, the most active partner, the partner that will integrate all the requirements of the Clean Air Act and ISTEA, yet the states and federal agencies have not let us in as that new partner. If they do not let us in, we

big bureaucracy is going to have to flex a little bit and let them exercise some of the experimentation that is necessary to perform this process. They must be given some freedom to do this. Don't constantly beat them to death with rules and regulations or it won't happen again.

The Ohio, Kentucky, and Indiana DOTs all come together through the overall work program of the regional council of governments. Recently we worked on the program under the context of ISTEA, and the turf protection that was going on around that table was incredible. I had been told that would happen under ISTEA: all the players in the game were jockeying for position. We cannot afford that. The region is a nonattainment region that must meet air quality requirements. If we play these games, we will not meet the standards.

MPOs are old players, but they are also the new player.The MPO boards will all require new representation. Virtually all of them are not properly constituted to perform the job. Most of them will have to be taken apart and put back together.

MPOs must work with new players and special interests that they have never dealt with before. For most MPOs, that will be a difficult chore.

Another problem for MPOs is whether local elected officials will, as MPO members, make the necessary regional decisions. It is extremely tough when local elected officials have to make regional decisions, and in some cases, those regional decisions will go against their own local jurisdictions. It will certainly make for exciting board meetings.

The down side of this is that if MPOs do not carry out this responsibility—and I am talking about governance issues—they will be replaced. I truly believe that if we fail to step up to the plate, we fail to have the representation, and we fail to make the decisions, then certainly the federal and state governments will exercise their option and find a new player who will.

MPOs must reconstitute themselves, get new representation, and deal with the new players at the table, or they will be left behind. MPOs received the opportunity to influence decisions through this act. I hope we don't mess it up.

I believe that we can do the job. I have great faith in MPOs and regional councils of governments, but the only way it will work is if we are accepted and respected by the federal and the state governments,

strong partner and the key element but have not allowed them to play that way. If we are allowed to be that partner, we can carry it out.

GLORIA J. JEFF As a representative of the Michigan Department of Transportation (DOT), I am excited about the opportunity for new inclusions in the planning process.

One thing that participants at this conference have agreed on is that transportation planning under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) is no longer "business as usual." How do we begin to not get hung up on the old business, but get into the new business, the new opportunities and challenges?

The Clean Air Act Amendments (CAAA) of 1990 and ISTEA are the most significant pieces of social engineering to occur in the last 200 years. They will cause people to modify their behavior in such a way that they will begin to do the "right" things even though they don't want to. There are tremendous challenges for state DOTs and for all involved in the process.

A part of me wonders about the formats that have been used as we have talked about ISTEA. The "new kids on the block" have given their perspective, as have metropolitan planning organizations (MPOs) and state DOTs. Have we not begun to perpetuate business as usual? We could be focusing on how to integrate the processes and how to work better together.

We should begin within the context of talking about statewide transportation plans that provide a vision of a transportation network that is not modally constrained. How do we go about moving people and goods? How do we move from being wonderful caretakers of transportation systems to managers of transportation systems? How do we go about the process of identifying where we want to end up? What is the vision? How does transportation fit into that vision of what the state or the region or the city is going to be?

It is not a question of whether we have protected the natural environment, the fish, the fauna, the birds, and the endangered butterflies but of how that all works together with the social and economic environment of humans.

Plans for bicycle pathways are unimportant if they are not part of a connected vision. We can have all the bike paths in the world, but the

Recent examples show what happens when transportation professionals ignore the fundamental problems of what happens in urban America and instead focus on getting a bus out on the street, pouring concrete, and protecting their roles in the planning process in the MPO.

We forgot, and it is indicative of our narrow focus, that one group that is not on this panel is the customers. We have talked about those who must implement the process and those who are concerned with the impact on the natural environment, but we have not discussed or included the customers in the deliberation. We have not included those who are dependent on the quality of our transportation system to move goods and transport them to work, play, and medical and other essential services. It is fascinating. In the midst of the discussion today, no one has talked about one of the critical aspects of ISTEA—the new requirements for public involvement.

It is not enough for those of us in the planning and transportation industry to sit around and talk candidly among ourselves. Now we must go out and ask members of the public what they want, or, better still, involve them in project development. We must include not only elected officials, but also representatives of community organizations that deal with the fundamental problem of transporting people from the city to jobs in the suburbs. We must include representatives of community organizations who have become frustrated with the bureaucracy and have bought half a dozen vans to transport people back and forth because the transportation profession has let them down. Meanwhile, transportation professionals have spent volumes of time on who does what, what is the appropriate role for this player, and who is going to watch for what.

State DOTs must establish a strategic leadership role by pulling together the people who should be involved in establishing a vision for transportation in the state. We must do it by facilitating a forum in which everyone who is involved in the process examines not just the technical aspects of identifying data and conducting the analyses, but also customer desires (not our perception of the customers' needs).

If customers have not been included before that point in establishment of the vision, transportation professionals may well be collecting data and performing analyses that have nothing to do with what the system must deliver. The private sector must be included in this process.

Michael Meyer hit on it well when he talked about institutional

expertise. Unfortunately, integration of these various areas of expertise has not been discussed.

In listening to the comments today, I am challenged that we recognize the tremendous opportunities that we have, and I am uplifted that we have already begun to limit ourselves to those things that are feasible.

Instead of discussing seven management systems, we have talked about the six that are in the law. There is a seventh one that is critical, which addresses how we integrate the other six management systems and the long-range plans. Do we simply have expert systems that address pavement, managing safety, or bridges?

We need to move past the profession of transportation and become active in the issue of how transportation fits into society as a whole.

My challenge to you as we examine the issues at this conference is to not get hung up on what we as technical experts, providers, and implementers of the transportation policy have to do, but recognize that there are customers that must be served, whose needs must be determined and addressed.

Partnership and Partnership Development: ISTEA and CAAA—Breakthrough or Mire?

James E. Kunde and Dale F. Bertsch
Lorain County Community College, Elyria, Ohio, and Department of City and Regional Planning, Ohio State University, Columbus

THE IMPLEMENTATION OF THE Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which has been coupled with the implementation of the Clean Air Act Amendments of 1990 (CAAA), offers both risk and opportunity in an America in which citizens have become frighteningly distanced from government. The call for better planning and more efficient application of increasingly scarce government resources has been accompanied by a decline in publicly supported regional planning mechanisms. This trend is due in part to the close association perceived between regional planning mechanisms and the bureaucratic processes and programs that were blamed for the failure of the War on Poverty.

Doing it right this time includes several requirements. First, the federal system was designed primarily to prevent leadership conspiracies. It only works when the public grants clear and sustained permission. Public permission requires an understandable process that occurs in a visible place with understandable outcomes and definite progress. The notion of partnerships—and the examples of community success

1. Symptom-relieving programs will not work. An investment strategy focused on problem identification, explicit goals, and joint investment with clear, immediate success will.

2. Most problems do not correspond to government boundaries. The best solutions come from places where a community of interest forms across governmental boundaries and delivers solutions to governmental bodies for action. Communities of interest generally occur in real places that have names, as opposed to areas known as the "five counties of _____," for example. The authors of ISTEA want to resurrect metropolitan planning organizations (MPOs). The degree to which MPOs represent real places and develop real identities is probably the degree to which they will succeed.

3. The actual decision-making process must be visible and understandable to the public. The nation will not support another federal intervention failure. Experiments like the Kettering Foundation's Negotiated Investment Strategy (NIS) show how the federal system can work effectively. NIS employed (*a*) a neutral facilitator; (*b*) a condensed, efficient time frame; (*c*) a process adapted from the most successful negotiations experience (single-text negotiation); (*d*) face-to-face negotiations (no protracted sequential approval processes); and (*e*) signed public agreements (clear evidence of achievement).

ISTEA is especially important as the nation's leaders refocus on the need to bring inner cities back into the mainstream. The mainstream itself is not doing well, which complicates the picture. A great deal of the complex equation for economic development depends on transportation and transportation-related investment. A great opportunity exists to use ISTEA to stimulate economic recovery and greater equity. The opposing potential for stalemate is also great and would result in even more public rejection and distancing. The lessons from past experience are clear. Applying them now is critical.

THE CHALLENGE

The development of ISTEA combined with CAAA represents a potential sea change in transportation planning in America, especially urban

rhetoric about the need for better planning and foresight in virtually all of urban and rural America, when the federal government stopped requiring a local planning process (A-95), many places dropped back from any commitment to and support of regional planning. The planning capacity of most MPOs has degenerated during the last several years. Those that survived have generally survived as innovators of cooperative technical assistance. They have become technical pass-through bodies for limited decision options and have attracted only mild interest from interest groups and local officeholders. The prospect of what they could become with the implementation of ISTEA and CAAA would enormously challenge the leadership now administering these bodies. They could easily become the most important place for regional leaders to engage each other in framing important issues. The implications of the latter are perhaps best expressed by the results of two surveys conducted by the National League of Cities during the past several years. In each survey, the number one problem expressed by local officials was getting along with each other.

ISTEA and CAAA call for decentralization of key decisions that shape land use—transportation and highway facilities—to MPOs. This would place political decisions within easy reach for conflicting interests, local press, and local citizens—something never done before in the United States. In the previous local planning process, MPOs were only given the opportunity to review and comment. ISTEA could cause the real decisions to be made through the local political process.

The ISTEA/CAAA combination also para-positions air quality and mobility—two major interests of local leadership. Some even believe that it gives air quality preferred status, although that remains to be seen. In any case, access has been the economic development issue that does most to ignite the passion of private-sector leadership. The rights and interest of the disabled for mobility and access to jobs and community amenities is only now being recognized. Countless surveys and focus groups show the strong latent support of citizens for stronger environmental measures (conversations with James Shanahan, Director of the Urban Center, University of Akron). Clean air may be the flagship of the baby boom, which is now coming into political power in most local governing bodies. They will be at the table as well. ISTEA is the only federal program with significant funding. Coming on the heels

ISTEA provides local MPOs with a stronger position on transportation decisions than they have ever had before. This precipitates a more equal relationship between state transportation planners and local officials. Given the diversity of local officials' interest and the generation of strong diverse interest groups at the local level, a completely new environment for transportation discussions between state and local authorities may result.

ISTEA and CAAA will undoubtedly precipitate local pressure to restructure MPOs. In many cases, multiple MPOs have sprung up within a common clean-air district. This phenomenon happens primarily in areas in which the clean air district does not engage a real community identity or interest.[1] ISTEA will bring about more pressure for local coalitions to define an MPO membership and operational structure to better represent the interests of individual coalitions. This may force more states to take action to designate regional planning areas and define the rules for operation.

Another good news/bad news aspect of the act is that it probably will become the primary means for government funding for job creation in a struggling economy. There will be great pressure to get moving and use the funds. The Los Angeles crisis will make that scenario even more urgent. At the same time, there will be great opportunity for special interests to block actions and develop their own influence and power. The scenario is a challenging one.

COMMUNITIES OF INTEREST

Blaine Liner, currently at the Urban Institute, was for many years the Director of the Southern Growth Policies Board. He frequently said he could predict which states and local areas were most likely to produce new cutting-edge programs. They were invariably areas in which a real community of interest could be identified outside the structure of government. The new programs appeared to result from situations in which representatives of many diverse interests (including but not dominated by governmental officials) came together and formed something that they then submitted to the government agencies for approval

and ratification. Liner pointed out that an obvious help in forming a community of interest is a common identity. Thus, local areas that have a regional name or designation (e.g., Tidewater Area) are more likely to form a community of interest than amalgamations of counties or cities (e.g., the five-county metropolitan area of _____).

Dolph Norten, long-time head of the Cleveland Foundation, the Ohio Board of Regents, and the University of Virginia Institute of Government, frequently talked about how communities appear to have almost a "superordinate consciousness" and "biorhythms." He often related how Cleveland was sometimes a "center for action" and at other times "dead as a doornail" without any discernable change in the quality of local leadership. Harlan Cleveland, who is now at the Humphrey Institute in Minneapolis and is former head of the East-West Center and the Maxwell School, subscribes to the notion, as do many other experienced community scholars, that it is the quality of followership rather than leadership that determines what places can do cooperatively and when they can do it (*1*).

Consequently, shapers of regulations to implement ISTEA should be conscious about the importance of developing a system that encourages partnership formation where the basis for a community of interests exists. Real partnership requires development of a real community of interest, not just a place for political representatives to work out compromises. Studies of places with communities of interest show the importance of communication systems and feedback and a basic level of public support (or public permission). Recent studies, such as the Kettering Foundation report on Citizens and Politics, suggest the folly of developing systems for decisions if the citizens are not "connected" (*2*).

These considerations are especially important for states that will attempt to define regional planning districts. As discussed earlier, more pressure will result from ISTEA for states to set up designated districts and to set ground rules for participation by subdistrict MPOs where multiple MPOs occur within one clean air attainment area.

All this appears to indicate that the implementing structure of ISTEA

A couple of years ago, the Lincoln Land Institute hosted a series of conferences on consensus building and partnership (*3*). The following were considered in the discussions.

1. Goals: Citizens participate in community-wide goal setting, an effort that is usually temporary, but sometimes ongoing (e.g., Goals for Dallas).
2. Citizen task forces: Citizens participate in efforts to focus on particular problems and develop solutions (e.g., Minneapolis–St. Paul Citizens League).
3. Key leaders organizations: Top leaders, usually corporate chief executive officers, determine priorities and work for their accomplishment (e.g., Cleveland Tomorrow or Chicago United).
4. Coalition of organizations: Organized special interest groups come together under a common agenda (e.g., the Denver Partnership).
5. Public choice campaigns: A community leadership group focuses on educating the community about a complex issue (e.g., Public Agenda Foundation program in Des Moines and Philadelphia).

A community might employ more than one of these types of efforts concurrently or in sequence. In general, these efforts are focused on one or more of the following critical tasks for effective community problem solving:

1. Reflecting interests. Effective problem solving requires all key interests to come to the table; otherwise, blockages eventually occur.
2. Feedback. Effective community progress depends on a sense of progress and, more often than not, a sense of how the community feels about itself. Reflecting on itself through surveys, dialogue, or both is usually critical to effect change.
3. Involvement. Few long-term constructive changes occur in places without a sense of ownership of the problem and agreement on the solution. The larger the direct involvement, the more likely implementation will occur.
4. Crossing boundaries. Few problems (especially transportation and air quality problems) are confined in formal governmental boundaries. Few real communities correspond with political boundaries. Successful problem solving must transcend political boundaries.

5. Education. If communities have some sort of superordinate consciousness, then education of individual citizens is critical. It is now clear that what citizens learn from each other may be the most important part of setting an environment for problem solving.

6. Framing issues. A major finding of recent studies of citizens' attitudes toward politics (e.g., the Kettering Foundation study of citizens and politics) is the failure of political leadership to frame public issues in the language of the public. All too often the issue is oversimplified to the point that the public regards it as either extreme or trite, or it is expressed in jargon that the public has no interest in following. Success in consensus building requires honest framing of real issues in language that conveys the complexities of the issues to the public. In addition to general public comprehensibility is the need to incorporate the interests of contending parties, so that the framing of the issue promotes bringing the parties together for negotiation. Issue framing is one of the most difficult and critical tasks for successful partnerships and consensus building. As the institute worked through an analysis of processes against the tasks required for effective results, the matrix shown in Figure 1 was developed.

	Reflecting Interests	Feedback	Involvement	Cross Boundaries	Education Working Through	Framing Issues
Goals	X	X-	X	X	X-	-
Citizen Task Force	X	X-	X	X	X-	X
Community Planning	X	-	-	-	-	-
Key Leaders	X	-	-	X	X-	X
Coalition Of Organizations	X	X-	X-	X-	X-	X-
Public Choice Campaign	X	X	X-	X	X	X-

X = Very Effective
X- = Somewhat Effective
- = Not Very Effective

NIS EXPERIMENTS

NIS is a unique process that was developed by the Kettering Foundation several years ago in response to the challenge of coordinating federalism. It was based on what appeared to work in local problem solving and what appeared to not work in the early experiments of the War on Poverty. NIS includes a high-profile, short-time-scale process (*4*) in which all the key decision makers and interest group leaders gather together in one place in a series of face-to-face meetings and work through an investment strategy.

Key parts of the NIS concept are as follows:

1. An investment strategy. Program funds are all too frequently applied to relieve the symptoms of a problem. If an effort is made first to define the problems and needs and a resulting set of conditions is agreed on, program monies (both public and private) can then be applied as investments in achieving that set of conditions.

2. A neutral facilitator. The availability of a trusted neutral facilitator has been repeatedly identified as a key to cooperation among diverse interests. Perhaps most important, it resolves the leadership question by enabling the process to be conducted by someone who will not subsequently be a factor in local political contests.

3. Development of negotiating teams. The process basically embraced the concept of Roger Fisher's Single Text Negotiation (*5*). Single text negotiation starts by pulling individual interests together into group proposals and disparate group proposals into one structure for point-by-point consideration. The process quickly brings a chaotic set of issues into a manageable context.

4. Face-to-face discussions. Studies of implementation [e.g., work by Wildavsky and Pressman (*6*)] illustrate the low success of programs that require sequential review and approval processes. Having key decision makers work through a set of issues face-to-face at one time makes a discernable difference.

5. Signed agreement. A signed agreement not only makes commitments clear, but provides an opportunity for celebration of achievement. Scholars who study consensus building frequently cite celebration as the most important step in long-term success.

gional Council. Its record of success has been heralded for several years in all three places. In 1980, the new administration did not want the federal government in an initiating role. The NIS impetus shifted to the states. Connecticut, Mississippi, Montana, Oregon, South Carolina, Washington, and others used it in implementing various block grant programs. It is used in many places today in varied forms in community problem solving. However, its design was to enable an effective process to occur within a complicated federal system, a prescription seemingly fitted to the ISTEA/CAAA challenge today.

LESSONS FROM NIS

Studies of NIS and other community problem-solving and consensus-building efforts appear to suggest the following guideposts for a successful implementation procedure for ISTEA and CAAA:

1. Focus on investment, and do so in an understandable and high-profile environment. The greatest problem in the United States today is probably public cynicism. Studies show that cynicism may be justified by processes designed to keep interfering influences out. Too few funding resources are available to do symptom amelioration, and public support margins are too narrow to allow another federal initiative to be regarded as a failure.
2. Temporary third-party intervention is useful. States that have adopted requirements for regional land use planning have typically adopted third-party mediation capacity to accompany it. Discussions about regional cooperation success at the 1992 American Society for Public Administration conference identified third-party facilitation as the most frequently mentioned ingredient of success.
3. Enormous capacity is available to deliver results in the hands of administrators in different agencies and at different levels of government if they work in concert. By the same token, most efforts of administrators at all levels are blunted by countervailing efforts or positions by counterparts. Places or programs where disagreements can be set aside while participants work together on agreements are clearly more successful than those where petty disagreements and misunderstandings cause suspicion and blockage of action.

nities have been unable to develop partnerships without a push or crisis because of this inertia. A successful process for precipitating partnerships depends on someone assuming the responsibility to initiate a consensus-building procedure. The increasing availability of community problem solving centers across the country will help. Examples such as the Florida Growth Management Conflict Resolution Consortium and the Human Services Division of the Vinson Institute of Government at the University of Georgia show how the development of a program to push facilitated problem solving enhances the initiation of efforts to achieve cross-interest agreements. It is also clear that facilitated agreements offer a unique opportunity to show progress, which in turn improves the environment for continued support and ultimate success.

IMPLEMENTATION QUESTIONS

The initial design and conclusions of this paper were tested by circulation of a draft to some contemporary scholars in the field and a presentation to the National Transportation Planning Board Conference on ISTEA. The following questions emerged from those reviews:

- How is a community of interest fostered?
- How are existing MPOs examined and evaluated?
- What tools are needed and available for partnerships?
- How are new partners brought in?
- What is the role of leadership?
- What key ingredients make partnerships work?
- How is success gauged?
- How are problems troubleshot?

The following paragraphs are possible answers to those questions.

Fostering a Community of Interest

Various methods can be used to determine if the basis for a community of interests exists. Has there been an effort to form a regional problem-solving program? What boundaries have been used and why? Is there a name for an area that closely corresponds to the clean air attainment

with the quality of community directly proportional to the ratio of "odd couples" in the conversation (7). Is there anything there that meets Palmer's definition? If there is, or evidence that it could be, George Gallup and others would suggest that the most important step is to make it "aware of itself." The Gallup model for local polling is a good start (conversations with George Gallup, Sr., 1975–1980, and George Gallup, Jr., 1991). Poll results can show members of a community how the community as a whole thinks about things—the most basic part of the reflective consciousness that marks the development of living tissue into a human being. David Mathews suggests that the most important act of leadership is to "go talk to somebody."

Evaluating Existing MPOs

Some logical guidelines appear to come from successful partnerships. Is the MPO more than a technical assistance body? Who attends the meetings, and do they attend regularly? Have they been secretariats for what people regard as key leadership bodies, such as Cleveland Tomorrow or the Dallas Citizens Council?

Partnership Tools

There is a rapidly developing field of community problem solving. Key institutions are state offices or programs for negotiation, dispute resolution, or problem solving. The Hewlitt Foundation has invested heavily in establishing dispute-resolution and problem-solving centers across the country. A national coalition of public interest groups has formed the Program for Community Problem Solving, which has just published a national resource directory (8). In addition, the National Civic League has developed a helpful tool called the *Civic Index* and provides problem-solving organization assistance to states and communities (9).

Bringing in New Partners

The National Civic League's process for stakeholder analysis is repre-

about, and still the least understood concept there is. One thing that all appear to agree on, however, is that leadership forms the agenda; it starts the discussion. If the process is designed well, the discussion will attract the parties that need to be involved. By defining a process that follows the guidelines suggested, the government officials who initiated ISTEA will attract needed leadership. A good start can be made by using the type of stakeholder analysis suggested earlier.

One critical, yet often overlooked, function of leadership is making sure that there is celebration of progress as work starts. Often the media are criticized unfairly for not telling the good news when leaders operate secretly, shun exposure, or avoid stopping and creating the events that let the public know when a critical issue has been resolved or a major breakthrough achieved.

Key Ingredients for Partnership

People involved in various programs for community problem solving around the country seem to concur on most of the following critical pieces for success: good groundwork (interviews, analysis, reflection), effective facilitation (seeking to understand before being understood) (usually best done by a third party), and early agreement, with appropriate celebration of progress.

Gauging Success

Success comes from implementation, and successful implementation requires celebration. A record of celebrations is not a bad indicator of progress.

Troubleshooting

The best allies for ISTEA implementors are probably the state and local problem-solving institutions described earlier. Although many things have developed in communities during the last 2 decades, the most

impressive may be the development of community leadership training programs (from 5 to more than 400 in less than 20 years) and the development of community problem-solving institutes or programs (the directory lists 83), most created during the past 5 years. Some places have linked the community leadership development programs with their problem-solving institutions. Training programs offer an important opportunity to learn about ISTEA, and the problem-solving institutions are a great new resource for fixing trouble spots and learning how to avoid the pitfalls of the local planning process previously in place.

SUGGESTIONS FOR IMPLEMENTING PARTNERSHIPS

ISTEA and CAAA are sure to precipitate a major change in regional planning processes in this country. At one end of the scale, they could reinaugurate all the bad examples that eventually caused the demise of the A-95 local planning process: manipulation by power-seeking bureaucrats, exploitation by special interest groups, and disenfranchisement of community interests groups who could not keep up with the jargon and complexity of the process. On the other end of the scale, the acts could cause a major stalemate between powerful community interests (e.g., the roadbuilding, development interest versus the clean air interest). Transportation policy, more than any other factor, has shaped the nation's physical structure and promises to do so for a long time. ISTEA puts more of the full game on the same table, which offers an incredible opportunity for improvement if the game is played by constructive rules. Experiments such as NIS and those of Florida and Georgia in regional land use planning suggest the power of the problem-solving paradigm. The degree to which implementing rules are designed to enhance processes similar to NIS may be the degree to which this new opportunity may be the turning point in instituting planning in America that works.

NOTE

1. There are numerous examples of where smaller MPOs have operated within the boundaries of a larger MPO. Current conversations between public

or seek a strengthened position in the Northeast Ohio Areawide Coordinating Agency.

REFERENCES

1. D. Mathews. *The Public as an Idea.* Maxwell School of Business and Public Affairs, Syracuse University, Syracuse, N.Y., June 30, 1982.
2. *Citizens and Politics, A View from Main Street America.* Harwood Group, Bethesda, MD.; Charles F. Kettering Foundation, Dayton, Ohio, 1991.
3. J. E. Kunde. *Emerging Techniques for Building a Consensus: A Review of Models and Community Dialogues.* Lincoln Land Institute, Cambridge, Mass., 1985.
4. C. Moore and C. Carlson. *Public Decision Making: Using the Negotiated Investment Strategy.* Charles F. Kettering Foundation, Dayton, Ohio, 1984.
5. R. Fisher. *Getting to Yes.* Penguin Books, New York, N.Y., 1983.
6. A. Wildavsky and J. L. Pressman. *Implementation.* University of California Press, Berkeley, 1984.
7. P. Palmer. *The Company of Strangers: Christians and the Renewal of American Public Life.* Crossroad Publishing, New York, N.Y., 1981.
8. *Directory of Consultants Helping Communities Collaborate and Consumer's Guide.* Program for Community Problem Solving, Washington, D.C., 1992.
9. *The Civic Index: A New Approach for Improving Community Life.* National Civic League, Denver, Colo., 1988.
10. *Civic Assistance Program.* National Civic League, Denver, Colo., 1990.

Redefining the Urban Partnership: Public-Private Toll Financing Provisions of ISTEA

Steven A. Steckler
Transportation and Utilities Finance Group, Price Waterhouse

THE INTERMODAL SURFACE TRANSPORTATION Efficiency Act of 1991 (ISTEA) and automatic vehicle identification technology will share responsibility for the growth of toll facilities during the next decade. Discussed here are some of the toll-related provisions of ISTEA that could greatly influence the way state and local governments build and finance those facilities and how they repair and expand roads, bridges, and tunnels.

The following are the basics aspects of the ISTEA provisions. First, Section 1012 of ISTEA allows for state departments of transportation to use Federal-aid highway funds for up to 50 percent of the cost of a new toll road and up to 80 percent of the cost of a new bridge. Second, the road or bridge can be publicly and privately owned, as long as there is a contract between the agency receiving the Federal-aid funds and the private toll-road developer. The developer's capital counts as the state's matching funds. The tolls must be used for maintenance, recovering the cost of the facility, debt service, and a reasonable return on the developer's investment. The tolls can stay on the facility after it is paid off if

significant rehabilitation and expansion can be converted to toll facilities to pay for repairs. For those projects, Federal-aid funds can also be used for up to 80 percent of the cost of rehabilitation. Finally, the state may either grant the federal funds to the project or loan the funds to the project, regardless of whether the project is publicly or privately owned.

The following are several important points about the loan program:

- The borrowers may take up to 30 years to repay the loan.
- The loan must be subordinate to all other project debt (which means other creditors are paid first if the borrower defaults).
- The interest rate may be no higher than the state's earnings on its pooled funds.
- The first payments on the loan may be delayed for up to 5 years after the reopening of the project.
- The repayments may be used for any Title 23 project in the state. Most important, the money becomes state money. No federal requirements apply for the second round of projects.

Notice three things about these new provisions:

- The law strongly encourages the creation of new toll facilities and the conversion of free roads and bridges to tollways, especially since it allows states to keep the excess cash.
- This is the strongest federal law by far ever passed in support of public-private partnerships.
- The loan provisions are a good deal for everybody—the state, private toll-road developers, and public toll authorities—especially since the money loses its federal requirements as it is recycled and, if the Federal Highway Administration (FHWA) agrees, the loan repayments can be used as a "soft match" (Section 1044) for other free highway projects even as they are being reloaned to new toll projects. If this practice is allowed, the normal state matching funds would be freed for use in other projects. Although not stated explicitly in the law, it is clear that members of Congress were thinking about states setting up permanent revolving loan funds with the federal aid they receive, perhaps changing the way almost all state transportation projects are financed.

somebody else.)

You see, my past experience with members of Congress was that th usually learn about privatization the same way that Woody Allen re *War and Peace*. Allen said that he read the book in an hour a concluded that it was about Russia.

I believe I know why Congress was listening this time. We all kn about the dire straits of the federal government and the desire Congress to stretch limited funds as far as possible, even if it mea having them leveraged by private-sector investment.

Support also emanated from the state and local level, where a gene shift to user charges has been under way for more than a decade. Sin 1976, the percentage of infrastructure facilities financed with us charges has risen by nearly one-third. This is in response to pressi needs in other areas of government and a powerful resistance to gene tax increases.

By shifting to user charges, state and local governments free general revenues for other uses. Similarly, by building toll facilit instead of freeways, state governments free up highway funds desperately needed maintenance and rehabilitation.

A public-private partnership can be fostered wherever there a user charges and a self-financing facility. Many people believe th public-private partnerships make full-cost user charges easier accept. In addition to making tolling easier and allowing the mon to be used elsewhere, private toll roads generate tax revenue. T $250 million extension of the Dulles Toll Road near Washingto D.C., by the Virginia Toll Road Corporation is expected to gener more than $500 million in direct state, local, and federal taxes duri its 25-year private life.

In general, a private toll project can be expected to yield about $2 direct tax revenue for every $1 spent to build it. Once the init investment has been recovered, all of the toll revenues can be placed the state highway fund.

About 12 states have now passed private transportation infrastru ture laws. The following are the basic models for public-private pa nerships that are included in ISTEA.

- Build-own-operate (BOO). This type of partnership is un stricted, but regulated for safety, quality of service, and probal

price or rate of return. No examples exist to date, but proposed high-speed rail projects are similar. Some ISTEA toll projects will probably be BOOs.

- Build-operate-transfer (BOT). This type of partnership is the same as BOO, except that the franchise only lasts for 20 to 40 years. After that, ownership is transferred to the government. One example is the Dulles Toll Road extension project in Northern Virginia.
- Build-transfer-operate. This partnership model is the same as BOT, except that the title is transferred to the state after construction. Full financial responsibility remains with the developer, who collects the tolls. An example is the California model.
- Lease-develop-operate. This type of partnership is ideal for major ISTEA reconstruction projects in which a free facility is being converted (at least temporarily) to a toll facility. The developer takes control and collects tolls, but ownership never changes hands.
- Wraparound addition. In this model, the core facility remains publicly owned, but a private, complementary facility is wrapped around or inside it. Innovative use of Federal-aid rights-of-way is discussed in ISTEA. In California, a private developer is going to build a toll facility down the middle of a congested freeway (SR-91) on Federal-aid right-of-way.

These models are in use all around the world. About 50 such projects are under way.

The public-private agreement is the heart and soul of an ISTEA toll project. It is the contract that the law requires between the grantee and the private tollway developer. Defined in it are the following:

- Responsibilities of each party,
- Standards for safety and design,
- Allowable rate of return for investors,
- Length of the franchise,
- Reporting requirements and inspection rights,
- Incentives and sanctions, and
- Remedies for default by either party.

The ISTEA loan provisions are important public-private partner-

- Competition from routes and modes;
- Cost overruns and delays (no one will pay more to use the road just because it cost more to build it);
- Hostile legislators and people who just plain dislike roads and tolls; and
- The delay before a profit is made. Profit is not an extra cost; it is the cost of capital, equity capital, just like interest is a cost of debt. However, equity involves more risk.

ISTEA loans, because they are subordinate to all other project debt, become almost a form of equity. In effect, they are the state's investment in the project. With this kind of public commitment, private investors are willing to put their capital at risk. Without it, it takes a lot more Pepto Bismol to make a project work.

As mentioned previously, the law gives states the flexibility to set up permanent state-level revolving loan funds, similar to the state wastewater treatment revolving funds allowed by the Clean Water Act.

Following are several points to remember:

- When the proceeds of bond sales are added to the Federal-aid funds (which are actually state funds reimbursed by the federal government), the resulting sum is several times the Federal-aid seed money.
- Once the initial state money has been loaned, the loan itself, not the specific charges from specific projects, is eligible for Federal-aid reimbursement. That is a great improvement in timing and paperwork.
- Private capital in the project can be used as the state match. FHWA officials are currently deciding whether loan repayments can be used as a soft match for other nontoll projects, even if they are reloaned for other toll projects.
- Making a profit on the loans means that the funds can grow over time.
- Once the fund starts to revolve (that is, as the loans are paid back), the money can be reloaned for any Title 23 project (state, local, or private) without any federal strings attached.

This sounds complicated because it is, but help is on the way. Price Waterhouse is helping FHWA develop a brochure to introduce these

public-private partnership provisions in each state, including how to set up state highway revolving funds and how to leverage them for other state transportation projects.

State officials and members of metropolitan planning organizations should think about how to take advantage of the new flexibility in ISTEA. How can the public-private partnership and tolling provisions of ISTEA be used to help meet the financial planning and financial feasibility requirements imposed by ISTEA? How can these options be incorporated in routine planning for transportation improvement programs and state transportation plans? How can state laws be changed to provide for creation of public-private partnerships and toll facilities? Will business go on as usual or will the challenge offered by Congress be accepted?

Abbie Hoffman said that in a revolution there is no such thing as an innocent bystander: if you are a bystander, you are not innocent. Please join the revolution that Congress started in 1991.

Wanted: Pliable Paradigms for Transportation Investment

Thomas D. Larson
Administrator, Federal Highway Administration

CLEARLY, THIS IS A time of new directions and opportunities in surface transportation in the United States. Explored here is how full advantage can be taken of those new directions and opportunities. If transportation professionals develop new perspectives and learn about the specific needs of our customers, products can be appropriately tailored to foster an effective and efficient transportation infrastructure. Applying the new directions embodied in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) demands a sea change in the way we think about transportation investments and the role they will play in society. That change in thinking and how it affects organizations charged with implementing this law are explored here. Special note is taken of the planning process so crucial to its success. In the language of the day, provisions of ISTEA will prompt pliable paradigms to guide future investment decisions and assessment of their worth.

The title and declaration of policy in ISTEA point to the new order. Enactment of ISTEA provides prima facie evidence that efficient achievement of transportation objectives will be defined principally in terms of the customers transportation must serve and by the con-

develop a strategy that will ensure that the multibillion-dollar decisions concerning transportation investments that are made in the 20th century pay off in the 21st.

The focus of concern among the participants at this conference has been the increasingly large and complex transportation needs in the urban environment. In seeming contradiction with this focus, many of the things discussed here have traditionally been considered in the context of freight movements and business-related transportation needs and less frequently applied to the movement of people. However, at the heart of the message is a challenge to find ways to think of transportation not in terms of competing modes or passenger versus freight, but in terms of the specific societal functions it serves: economic, social, and environmental, for example. Recall how transportation has influenced the integration of this continent and thus the national culture. Can the failure of the Soviet Union to integrate the individual republics with efficient transportation from Moscow to Kiev be pointed to, for example, as a contributor to its dissolution? Would more timely movement of vegetables from the farms to the cities have slowed the demise of the union?

Transport serves functions across regional, urban, suburban, and rural boundaries. It serves customers, not places. Is it possible to overemphasize that before transportation needs can be addressed, planners must understand who the customers are and the full nature of their transportation needs? The answer is indeed not. This customer focus is at the core of seminal private-sector management thinking, and so it must be for transportation professionals.

The transportation services customer list has grown to include not only commuters, carriers, households, and shippers, but at least three other types of clients: (*a*) consumers of the externalities of transportation (e.g., people breathing polluted air), (*b*) those affected by land use decisions intertwined with transportation patterns, and (*c*) those who pay the opportunity cost of public investment (e.g., advocates of alternative uses of public funds).

To serve that extensive clientele, we must learn to do our homework outside the traditional transportation disciplines and concerns, paying close attention to the tremendous breadth of economic and social forces driving the evolution of cities as marketplaces, manufacturing centers, and liveable spaces. We must keep checking up on what we

Changes in basic assumptions on which transportation is forecast are continuous (e.g., changes in land use and commuting patterns). With a business-as-usual mindset, we could find ourselves planning and reacting without a firm grounding in contemporary reality. The large numbers of working women and mothers; two-, three-, and four-car households; and federal tax laws on real estate made circumstances ripe for developers to bring offices and stores nearer to where many prefer to live—in suburbia. Joel Garreau links this convergence with the development of "edge cities." This land use phenomenon wreaks havoc on transportation systems (highway and transit) that are designed to move people in a means consistent with more traditional urban forms (i.e., between central cities and the immediate suburbs).

Even as urban forms change and the transportation inefficiencies of dispersed suburban life are recognized, it has become increasingly clear that Americans favor dispersion and want more mobility. Americans also want energy efficiency, social benefits, a sound economy, and a clean environment. The trade-offs between and the complementarity of these goals will be determined by the needs, desires, and community values of an increasingly broad set of stakeholders. This is the central, contemporary lesson for those who manage the transportation system, both its infrastructure and operation. As the country's development matures, as basic access is provided, the earlier strategies for investment necessarily shift. This lesson, broadly applied, will change the way the transportation community sees, and thus serves, its customers.

Although we do not know just how to meet all these diverse transportation expectations, the impacts of public infrastructure investments on the economy are becoming clear. Also, there is a growing, surprisingly strong, recognition of the need to sustain an acceptable growth rate for the U.S. economy as the nation's most important long-run economic goal.

In an open letter to Congress, the President, and the Federal Reserve, more than 100 prominent economists argued that economic recovery and higher growth productivity could only be achieved by increasing the rate of investment in people, infrastructure, technology, and machinery. What was so amazing about this call for significant expenditures to spur economic growth was the full recognition of the impacts on the budget deficit, which was heretofore one of the biggest concerns of this profession.

and development, and infrastructure. Illustrative is a recent *Business Week* cover story, A Growth Policy for the '90s. It listed seven items, the fourth of which was infrastructure. Economists and political leaders, particularly many governors, are beginning to appreciate the stimulating effect, beyond on-the-site job creation, of an efficient transportation network on overall private economic activity. They are recognizing the nature of an adequate and well-maintained public stock of infrastructure to the profitable and efficient production and distribution of private-sector goods and services. An increase in public infrastructure investment, such as in highways, raises the growth rate of labor productivity in two ways: (*a*) directly, by allowing the available private capital stock to be used more efficiently and (*b*) indirectly, by promoting private investment, making more private capital available per worker.

The leverage of a relatively small public transport infrastructure investment on the significant private sector transport expenditure is enormous. Highways are generally supplied by public agencies, whereas operating costs and vehicle capital costs are incurred by private entities. They are intrinsically inseparable, and the attributes of the highways clearly have a major impact on operating costs. Whereas public disbursements for highways are less than $80 billion per year, private and public out-of-pocket expenditures related to the use of these facilities total nearly $1 trillion per year. Travel time and safety costs also total nearly $1 trillion per year. Thus, although public highway investments amount to a tiny percentage of total highway costs, they have a high positive leverage on private-sector efficiency.

The 1990 Economic Report of the President expresses the sentiment well:

> Inadequate government infrastructure can impede improvements in productivity growth [and] taking advantage of productive opportunities to maintain and improve the infrastructure is an important part of Federal, State and Local government policies to raise economic growth.

It is clear that the turning point coinciding with the so-called post-Interstate era and ISTEA signifies much more than a change in the structure and financing mechanisms associated with the Federal-aid

sciences yields more gradual change, making these shifts harder to identify.

Joel Barker, in his book *Future Edge: Discovering The New Paradigm of Success*, links the successful search for innovative approaches to problem solving with a tolerance and openness to new ways of thinking. He suggests that failures of old paradigms to address significant problems, followed by the creation and introduction of substitute ones, cause turbulence. This turbulence, in turn, generates a receptiveness to paradigm shifts toward approaches with explanatory power. The affected community with much invested in the old paradigm generates initial resistance and conflict while the new paradigm is tested and applied.

The following are two illustrative examples.

The first is the notion of the traditional American family: breadwinning husband, homemaking wife, 2½ children (statistically), and maybe a grandma or grandpa. While clear to many, some still ignore the profound impact of changed family life-styles (including the growing number of families with single parents, two breadwinners, no children, or unmarried partners) on society. Could it be that some element of society still hopes for the past structure and so invests in it an inherently greater value than other forms?

The second example is the notion of the typical commute made from the suburbs to the city. Studies have shown that the dominant commuting pattern in many areas is suburb to suburb. This has become an accepted fact in transportation planning, but vestiges of resistance are found in attempts to push land use decisions toward the historic urban forms that the transportation community is more comfortable serving.

Major paradigm shifts underpin transportation investment decisions today. As one rather simplistic example, consider the following: future strategic investments in surface transportation will be based on specific knowledge of customers and not on broadly defined highways-for-land-access motives. The implications of this simple shift for the way we position ourselves in the future to provide the public component of transportation are profound. In the words of Professor Boulding, of the University of Colorado, "The future will always surprise us, but we needn't be dumbfounded."

Another shift, this one in private business, might also be useful here. It occurred in business management after World War II and is

functions of the organization toward the identification and satisfaction of consumer wants.

This is a marked paradigm shift from the earlier, dominant production management philosophy that was focused on the development of a product, followed by efforts to sell it to customers. Concentration on the user shifted strategic decisions to the beginning of the process and required considerable understanding of markets and consequently emphasized the importance of market research.

Looking back, one sees abundant evidence of transportation investment driven by a historic policy to open up the country and thus provide access and interregional movement within politically tolerable variances. To a remarkable degree, we have continued to do what we did, as a nation, through the canal era, the railroad era, and the early highway era. For example, railroad service was perceived as so crucial to providing access to western lands that private enterprises were given 9.3 percent of total land area and large cash contributions to build the rail lines. Motivated in part by the need to make rural delivery of mail feasible, the chief purpose of the Office of Public Roads in the early 1900s was to bring about a general and uniform improvement of the roads throughout the United States. The mail had to be delivered to all parts of the country.

Investigating the path to the old paradigm can help anticipate the new one. During the early debates on the design of what was to become the Federal-aid system, a preference was expressed for a general system of roads radiating from the towns and railway stations as a means to integrate the business class of travel with the general transportation system of the country. In the selection and approval of what was later to become the Federal-aid primary system, each state designated a state highway system, including not more than 7 percent of all roads in the state, on which all the federal funds must be spent. Incorporation of land area in the formulas for distribution of the majority of Federal-aid categories reflected the perceived correlation between highway needs and space. Embodied in these actions was the old paradigm. The concept of coverage, that a good highway network design minimized the distance between the people and a high-quality road, treated all users alike. As early as 1923, estimates that at least 90 percent of the population resided not more than 10 miles from a Federal-aid road and

The Interstate system, following that perspective, wrought a revolution in the United States. At its inception, few people, transportation experts included, could anticipate the degree to which that national highway system would transform the country, providing a unifying force for commerce and making intercity travel easy for all citizens. The Interstate has shaped the economic and temporal geography of the nation via the transportation function. The unprecedented mobility it provides has altered life-styles and personal economies. Critics have pointed out some of the more unfortunate trends in society to which the Interstate system has contributed, such as overdependence on the automobile, suburban sprawl, and extravagant energy dependence. One outspoken critic, a U.S. Senator from New York, stated in his epic 1960 paper entitled New Roads and Urban Chaos, "The Interstate program is bringing about changes for the worse in efficiency of our transportation system and the character of our cities." Such criticism notwithstanding, the Interstate established a standard for transportation, an expectation by American industry and the general public for moving goods and people with speed and efficiency. Basic business decisions are now predicated on this speed and efficiency.

Clearly, the old paradigm-driven definition of one transportation goal, to complete the Interstate system, influenced perceptions in many ways. The focus on the engineering challenge of putting such an immense set of facilities in place contributed to the dominance of civil engineers in investment decisions. Once the products were defined in terms of construction, the opportunity for feedback on the social, economic, and environmental contribution of the facilities was limited. Assessment of alternative investments was limited to traditional engineering criteria. The focus on issues related to the facilities themselves distanced the designers and planners from the multiplicity of what are now considered relevant interests, even as the system matured. The highway community continued to follow the old paradigm, pursuing the provision of an even more pervasive system, providing facilities for the majority of vehicles (in most cases, personal automobiles) and assuming this was in the best public interest. Since transportation professionals tended to think in terms of facilities to accommodate vehicle miles traveled, there was little motivation to think of individual customers. Personal and commercial interests adapted to the system

It should be clear that this paradigm and the highway community have served the nation well. However, concern has been accelerating that the priorities of transportation providers are increasingly nonresponsive to their customers. Sometimes this has led to open public rebellion. In other cases, if disgruntled elements had the political clout to do so, they staged an end run of traditional federal and state transportation departments and went directly to their state legislatures or Congress. The result was pork barrel projects. Could it be that the system of project development and selection as it has functioned is inadequately attuned to or nonresponsive to an increasing set of legitimate transportation needs? Against what criteria should the public sector, embodied in transportation agencies, rank transportation demands? Cost-benefit analyses based on reduced direct transport costs clearly do not provide enough information for an assessment vital to the future of businesses and communities. On the economic side, companies with great market power may be able to make a convincing case and leverage their access through the local, state, or even national political system. However, for every influential business giant, how many smaller companies may be losing efficiency and thus productivity and market share?

With the maturity of highway systems and the many changes in demographics, land use, and economic geography, the singular goal of achieving widespread access through a network of upgraded roadways is no longer rational or attainable. Since the Interstate system was envisioned, interstate commercial activity, measured in terms of passenger and freight movement, has more than doubled. Since 1956, the nation's gross domestic product (GDP) has grown by more than 150 percent. Even with a declining growth rate in the GDP, the combined travel of personal vehicles and trucks with six or more tires is forecast to nearly double over current levels by the year 2020. The demand for mobility is reflected in the reliance on the highway mode for trips between 100 and 1,000 mi. The highway mode now accounts for 75 percent of freight expenditures and 75 percent of passenger miles. With truck travel forecast to more than double during the next 3 decades, the

although greater as a proportion of GDP than that of most European Community countries, is about half its real 1970s percentage. Although we believe that public support will permit raising this level, we must capitalize on the enormous investment in existing infrastructure. This implies a priority for maintaining the physical integrity of these systems and facilities, operating them at maximum efficiency, and searching for new technologies and approaches to improve their effectiveness. Even after all this is accomplished, the new and implacable reality is that transportation service will be evaluated against a set of standards that goes well beyond the transport function and includes many other societal concerns, such as wetlands, clean air, congestion, energy, damage to urban space, and much more.

Adequacy was mentioned previously in connection with an efficient private sector. Private transport users are not homogeneous—their needs and expectations are as diverse and competitive with one another as are those in the public sector. How do we tackle the job of keeping the transportation physical plant working while meeting such goals with shrinking resources and deteriorating assets? We could adopt a businesslike approach and assess investments by their contribution to society's bottom line: the ability to transport raw materials, people, and products in a timely and efficient manner, while not generating unacceptable side effects. A new paradigm is needed.

Is there a model for the new paradigm in the business community? The modern, deregulated telecommunications industry offers strong parallels with transportation infrastructure. This utility builds and operates for the public a pervasive infrastructure network at a large initial cost that is shared by a wide variety of customers for pleasure and private productivity enhancement. It is known for its user friendliness.

The basic characteristics of telecommunications, too often in uncomplimentary contrast with transportation, include ready adoption of high technology, healthy competitiveness, and customer responsiveness within the profit-driven market. Pricing mechanisms maximize use of the communications network to moderate the peaks and valleys of demand. Part of the success of the industry is based on extensive market research and its application in product design, operations, and marketing. This customer orientation enables the industry to develop quality products that users want and believe they need. It also provides companies with the ability to adjust their entire network in response to the

because they understand the dollars and cents consequences of poor performance.

The transportation industry is beginning to get the message: the new paradigm is focused on customers. A new focus is needed on how to address their specific needs. Looking to the future, a variety of organizational entities might function as the local transportation infrastructure company with this customer focus. Perhaps a private entity, as a public utility, will be responsible. Perhaps individual metropolitan planning organizations (MPOs) or departments of transportation will be responsible. Perhaps a combination of all the providers will be responsible, making the organizational lines invisible to the customer. Once such a company has taken the telecommunications model to heart, investments would be made to cost-effectively serve the full array of customers. The investments would be made not only in physical plants but also in high-tech devices to monitor and provide feedback for the system, in market research, and in the development of techniques to maximize system efficiency. Beyond the base equity case, service would be provided if the customers are willing to pay for the net result. Customer willingness would be based on understanding the risk of poor service; the infrastructure company or utility must make the trade-offs clear. Clients can assess for themselves the value of a higher class of service, at each price, and choose service levels accordingly. The average service is likely to be unacceptable to many customers because it could mean being less competitive in the market.

Back to today—what can be done to make this vision a reality? The place to start is with institutions. ISTEA leads in the new directions discussed here, but current organizational capacity is not up to the task of providing customer responsiveness at a level comparable with the telecommunications industry. The challenges that will come in putting aside the traditions and practices of both customer and deliverer that citizens have come to settle for should not be underestimated.

At the Federal Highway Administration (FHWA), that's what FHWA 2000 is about, that is, developing the attitude and the capabilities for a rechartered agency for the next century. The vision statement, developed by a broad-based agency task force working in plenary session, sets the tone: "Meet the Nation's need for the safe, efficient and environmentally sound movement of people and goods, and be renowned in surface transportation expertise and innovation."

partnerships to address issues specific to their localities and to do it on a real-time basis. The increased flexibility in ISTEA allows state and local governments to customize federal programs to meet local needs and priorities. FHWA will be a cheerleader and facilitator, not a dictator.

The National Highway System illustrates the new paradigm at work on a national scale. Selected cost-effective capacity increases to a subset of principal arterials, identified by the states, targets federal funds on higher-volume routes serving interstate and interregional commerce needs. In this way, the national system can reach beyond the Interstate system and reflect the changes in the shape of transportation demand since the design of the Interstate system in the 1940s. In fact, several states have already discarded the Federal-aid primary system as an integrated system for planning their investment priorities and are concentrating their investment on a reduced portion of that system.

The newly formed Business Transportation Council illustrates how FHWA will work with the Federal Transit Administration to energize the business community and tap its creativity and resources to help address the nation's transportation challenges. An independent business forum, the council is a group of senior business and private association executives interested in strengthening the government-industry dialogue on surface transportation issues. We can take advantage of that interest and use this group as a sounding board to get business reactions and basic input into programs and policies. I am committed to using every opportunity to bring new partners into the process.

Many of the same things stated here about the economic and leveraging effects of highway investments could be said about other modes of transport, such as ports, airports, transit, and rail. While we are expanding our view of customers, we should take the opportunity to incorporate the transportation suppliers and operators of other modes in our deliberations and outreach. The failure of institutions to provide seamless transportation performance in the view of the customer is the rationale for the intermodal emphasis of ISTEA.

David Osborne called states "laboratories of democracy." It is not surprising that many states are following the new paradigm and applying a new vision of meeting specific customer needs in assessing transportation investments. There are many good examples. Pennsylvania has launched a series of economic development projects that fulfill specific commercial needs. Illustrating this approach is one project

assessment of the Highway 29/45/10 Corridor in Wisconsin. Analyses of the impacts were based on extensive interviews of a comprehensive set of customers including residents, local business people, and travelers in determining (among other things) the benefits in terms of business competitive position and attraction of new business and tourism. State officials carefully examined the trade-off between maximizing total statewide benefits and the benefits to specific localities.

At the local level, ISTEA places new responsibility on MPOs. The capabilities of these organizations vary greatly, and many will have to make significant improvements to function as envisioned in the act. The planning process can act as a facilitating mechanism or a stumbling block. It can bring new partners into the process early enough to be constructive rather than so late that public participation becomes an exercise in salesmanship. This may be uncomfortable for those who have enjoyed historically defined working relationships. However, if transportation planners rethink paradigms and subsequently the institutional arrangements that bring political, industry, and government leaders together within a socially and environmentally responsible community, mutual understanding and trust will be developed and the results will be the better for it. Planners must consider, where such is not now the case, strong business participation in MPO policy boards or advisory committees. Their transport needs vary across time and space differently from personal pleasure and commuting demands. ISTEA requires that transportation improvement programs be consistent with known or expected financing. Consequently, it is imperative to involve the private sector in assessing priorities within the financial and all other constraints early in the process. Good timing will help the community at large to buy into the costs and benefits of transportation decisions.

Without a doubt, the technical competencies of all planners and analysts will be put to the test. The questions they face are tough. A fresh perspective is likely to target areas of ignorance and demand more information than the planning community has ever before been asked to provide. A thorough understanding of the interrelationships between environmental goals and investment choices, for example, is assumed by the Clean Air Act Amendments of 1990. Are we up to the challenge? A review of interactive transportation and land use models

are to forecast urban travel demand, let alone judge the impacts of alternative mixes of projects. Land use forecasting procedures have essentially remained unchanged in most major metropolitan areas for nearly 20 years, regardless of how inaccurate their predictions have been. Our understanding of the interaction between congestion and land use patterns has not been incorporated adequately. We all must work to rank new infrastructure investments against criteria that matter to our customers, with full knowledge that infrastructure is a scarce resource.

Transportation plays a pivotal role in serving new and old demands. It allows society and its economy to respond to emerging opportunities. These may come from changes in demographics, consumer tastes, the advent of new technologies, or changes in the international marketplace, just to name a few. Beyond any question, the nation's economy, demographics, geography, institutions, political agenda, infrastructure, and transportation problems have fundamentally changed and continue to change at an accelerated rate. Highway usage has seen enormous long-term growth. However, as that spiral of growth has continued to a point at which 90 percent of all person-trips are by automobile, countercyclical forces, often in the form of new players in what has been our arena, have gained strength and visibility. So do we put up barricades or adopt more pliable paradigms?

The choice is clear. Using just the paradigm of a service-oriented infrastructure company, we can reach out to and understand the full range of customers. Then we must work to meet specific needs. Our customers, citizens of this great country, expect nothing less of us.

New Dimensions in Transportation Planning

Brian W. Clymer
Administrator, Federal Transit Administration

A DOZEN OR SO years from now when we look back on the early 1990s, we will have no problem saying that the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) was the second-most important piece of legislation to emerge from this era. The law that really changed transportation landscape could well turn out to be the Clean Air Act Amendments of 1990.

I plan to sketch out a couple of areas that I believe are important to the implementation of ISTEA, not of ISTEA the law, but of ISTEA the concept, and then present a couple of new ideas as food for thought.

In the past, transportation planning and decision making were considered a kind of zero-sum game among metropolitan planning organizations (MPOs), transit operators, and the states. If more authority was given to one player, then authority had to be taken away from another. ISTEA, however, has changed the whole law of nature, if you will.

Everybody has more authority now. That has been done by forcing the old actors to the table in different ways and inviting some new ones. Citizen participation can occur at every stage of project development, and project development even invites new groups into the process.

MPOs, of course, are involved in project selection from financially constrained transportation improvement programs (TIPs). The role of states, governors' approval of TIPs, the role of the federal government,

Intergovernmental relationships should be changed without changing the business among ourselves and what we do. We have been working on a number of things for some time. For example, last year an intermodal facilities committee was established under the leadership of Gilbert Carmichael, Administrator of the Federal Railroad Administration (FRA), which includes not only FRA, but the Federal Transit Administration (FTA), the Federal Highway Administration (FHWA), and the Maritime Administration as well.

The idea of providing technical and procedural assistance to states and local and private sector proposers of new major intermodal facilities has been around for some time. FTA is working with the Environmental Protection Agency on conformity procedures and related technical assistance, and the agency is working on a project with the National Association of Regional Councils. A joint program with the U.S. Department of Housing and Urban Development will provide community-based transportation services in depressed inner cities.

FTA and FHWA are working cooperatively at virtually every level on every aspect of ISTEA implementation—metropolitan planning, statewide planning, guidance and regulation, administration of flexible funding projects, conformity with the environmental processes, and so on. The two agencies are also preparing a joint report to Congress on performance and needs.

An intermodal office that will report to the Secretary of Transportation is also being created. An FTA-FHWA joint task force will be established to facilitate the administration of some projects that will be funded with a combination of FHWA and FTA funds. One of the first projects will probably be in Pittsburgh, Pennsylvania. In addition, a joint task force will be created to investigate intelligent vehicle-highway systems corridors around the country.

Given that we are doing all these things, the charge to you is to help us do it better. That is part of what this conference is all about.

Let us know where there are governance problems at the federal level. You are on the outside looking in, so let us know what we can do to change, and help us identify internal problems.

Let me present a couple of new ideas. The first is a project that is part of FTA policy research and what is referred to as intermodal performance. It is an effort to build on some work that is already being done

in Europe and to develop a truly intermodal system of performance evaluation. The methodology is simplicity in itself. A core of people (graduate students, perhaps) is recruited and assigned to take a series of predetermined trips throughout a metropolitan area at various intervals during a year.

They travel from Point A to Point B by automobile; they then travel from Point A to Point B by transit, and so on. Over time, the differences in performance of the various modes are measured, with performance being the time it takes to complete the various predetermined trips.

Given enough time, trips, and other information about what kinds of improvements have been made in this mode or in that mode, comparisons can be made and conclusions drawn about the performance of the region's transportation systems and how investments in one particular mode may affect performance of the other modes.

At no point, however, should the basic identities of the various modes be combined together in sort of a big pot of stew. The modes should retain their identity even while the performance is being evaluated in what would be genuinely intermodal fashion.

This is not necessarily the last word on this type of project. The project is being approached with caution (we could be chasing the cat up a nonexistent tree), but the example is presented to underscore a much more basic point.

Intermodalism has to be built on a strong, solid, confident sense of modal identity, although intermodalism will without question add an exciting dimension to the world in the years ahead.

Another point has to do with finance. Twenty years ago, if a group such as this were to conclude, after its 3 days of deliberation, that inadequate capitalization was a prevalent theme across all transportation modes, the obvious answer would be to call on the federal government to provide more funds. Three days of deliberation is not necessary for people to realize that all modes of transportation are in dire need of fresh capital today. All one needs is a quick look at the morning newspaper to realize that calling for new levels of federal spending is pretty much a nonstarter.

We have all probably failed to appreciate the kind of major structural changes that have taken place in the federal financial apparatus during this same 20-year period. We don't realize how the federal tax structure is simply no longer the super-efficient money-raising machine that it

come something totally different from what they once were. We forget, in other words, that in spite of all the rhetoric about the federal roles and responsibilities, in many cases programs of domestic assistance were initiated at the federal level for no more profound reason than the fact that the federal government was able to raise money more efficiently, or at least more easily, than any other entity.

The point is that if we recognize the need for additional capital and we can't go to Washington for direct assistance, we ought to see if use of a concept known as securitization will help. One plus one is still two, and four times two is still eight. However, if you have eight, you may be able to parlay that into a lower interest rate than if you had only two. In a way, this is what securitization is all about.

Transportation systems have streams of revenue to which they have access, but few of them have been able to take that revenue to the bank and borrow against future dollars to obtain a capital asset that will help make the realization of future dollars all the more certain.

In the public sector, transportation systems tend to buy all their long-term assets with cash up front. Transportation planners must start thinking in terms of steady and reliable streams of revenue, not cash that is saved under a pillow until there is enough to buy the desired item.

A mechanism must be developed to pool needs and have the collective debt that is incurred to acquire assets today sold on the open market by an intermediary to the real sources of investment capital in the United States today (e.g., pension funds and money market funds). That is what securitization is all about. It means pooling the debts that are incurred to buy capital assets and using an intermediary to gain access to the money on the open market.

The intermediary is the key to it all because it is through the intermediary that standardized information about borrowers' financial situations is obtained, thereby making a joint offering on the open market with the confidence that the open market will demand.

Speaking solely from a mass transit perspective, the industry, in my

leasing provisions that allow the financing of debt with federal capital dollars.

As transportation planners begin to think about capitalization more seriously, we must not restrict ourselves to the relatively small domain of federal assistance for certain kinds of public transportation—mass transit and highways. Instead, a system should be crafted in which public and private transportation borrowing can be pooled from a much broader sector of transportation into a heftier market force, thereby leveraging even further some of the resources by reduced borrowing costs. Perhaps a type of Fannie Mae is needed for transportation investments. It could be called Dottie Fae.

The final point is on the fixed percentage set-aside established in the new authorization for research and planning activities. The research and planning budget and the way it is handled under ISTEA is an achievement that many conference participants can take a good deal of pride in, but we need the full funding set aside on it. That is not necessarily a given this year, but all members of the transportation community can have a role in making sure that it happens.

Steering Committee Biographical Information

Lawrence D. Dahms, *Cochair*, is Executive Director of the Metropolitan Transportation Commission for the San Francisco Bay Area. He received a B.S. in civil engineering from San Diego State University and an M.B.A. from Sacramento State University. His career has included various positions with the Bay Area Rapid Transit District, California Department of Transportation, and Arthur D. Little, Inc. He is a past Chairman of the Transportation Research Board (TRB) Executive Committee. He chaired the TRB Committee on the Study of High-Speed Surface Transportation in the United States and was a member of the Committee for the Study to Assess Advanced Vehicle and Highway Technologies. Mr. Dahms serves on the boards of the Eno Transportation Foundation, Inc., Californians for Better Transportation, and IVHS AMERICA.

Jack Kinstlinger, *Cochair*, is Chairman and Chief Executive Officer of KCI Technologies, Inc., in Baltimore, Maryland. He received a B.S. in civil engineering from Rensselaer Polytechnic Institute and an M.S.C.E. from the Massachusetts Institute of Technology. He previously served as Deputy Secretary for Planning at the Pennsylvania Department of Transportation and as Executive Director of the Colorado State Department of Transportation. In addition to his current position at KCI, he has more than 13 years of consulting experience. He is a past member of the TRB Executive

Committee and served on the Committee for a Strategic Transportation Research Study—Transit.

Harvey R. Atchison has been the Director of the Division of Transportation Development for the Colorado Department of Transportation since 1978. He is a member of the Western Association of State Highway Transportation Officials Planning Committee and the Energy Impact Advisory Committee. He also serves on the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Planning and the Policy Analysis Committee. He is a former member of the TRB Subcommittee on Planning Productivity and the Statewide Multimodal Transportation Planning Committee. He is a graduate of the Highway and Transportation Management Institute in Oxford, Mississippi, and the John F. Kennedy School of Government at Harvard University.

Sharon D. Banks is General Manager of the Alameda–Contra Costa Transit District, where she has also served as General Counsel. Ms. Banks earned a B.S. from Southern Illinois University, an M.A. from California State University at Hayward, and a J.D. from the Hastings College of Law in San Francisco. She has served as an attorney and legal assistant for the Oakland Unified School District, Assistant to the City Attorney in Oakland, and Senior Associate Attorney at the firm of Whitmore, Kay and Stevens.

Salvatore J. Bellomo is Principal, Bellomo-McGee Inc. He received a B.S. in planning engineering from Rutgers University and an M.C.E. and D.Engr. in civil engineering from Catholic University. He has served as Vice President of Alan M. Voorhees and Associates, Inc., and President of BKI Associates, Inc. He is a fellow of the American Society of Civil Engineers (ASCE) and Institute of Transportation Engineers (ITE). He is a member of the American Institute of Certified Planners (AICP), the Society of Sigma XI, and IVHS AMERICA. A registered professional engineer and planner, he is a past chairman of the ASCE Urban Transportation Division, and has received the ASCE James Laurie Prize.

Sarah C. Campbell is a transportation and environmental consultant. She was the founding Director of the Surface Transportation Policy Project—a network of diverse organizations formed to develop a national

District of Columbia Department of Public Works, and Assistant for Capital and Administrative Programs for the District of Columbia. Ms. Campbell is a member of the Women's Transportation Seminar and Committee of 100 on the Federal City. She is a recipient of the Secretary of Transportation Meritorious Achievement Award for contributions to the development of national urban policy.

Chester E. Colby is Director of the Metro-Dade Transit Agency, which operates light- and heavy-rail systems, 74 bus routes, and a demand-response service for the handicapped. He earned a B.S. and an M.B.A. from Indiana University. His previous positions include Director of Transportation Services at Indiana University; Public Transit Administrator in Phoenix, Arizona; and General Manager of the Regional Transportation Authority in Denver, Colorado. He is President of the Florida Transit Association and a member of the Board of Directors of the American Public Transit Association. Mr. Colby also serves on the advisory boards of the Center for Urban Transportation Research at Florida State University and the Institute for Transportation Research and Education at the University of North Carolina. Long involved in TRB activities, Mr. Colby is an individual associate of the Board, a Florida transit representative, and a member of the Committee on Public Transportation Planning and Development.

Brigid Hynes-Cherin is Executive Director of the San Francisco County Transportation Authority, a local, multimodal funding and programming agency; she has held that position since the agency's inception in 1990. Ms. Hynes-Cherin received a B.B.A. and a law degree from George Washington University and has completed coursework for an LL.M. in environmental law. She served as Community Planner, Regional Counsel in Chicago, Regional Administrator in San Francisco, and Western Area Director for the Federal Transit Administration (formerly Urban Mass Transportation Administration). She also served as Attorney Advisor for the Federal Railroad Administration and the Office of the Secretary of the U.S. Department of Transportation.

Christine M. Johnson is Assistant Commissioner of Policy and Planning at the New Jersey Department of Transportation. Ms. Johnson received a master's degree in urban planning and policy and a Ph.D. from the University of Illinois. Her career has included positions with the University of

Ronald F. Kirby is Director of Transportation Planning for the Metropolitan Washington Council of Governments. He received a B.Sc. and Ph.D. in applied mathematics from the University of Adelaide, South Australia. His career has included assignments with the Australian Highway Department and P.G. Pak-Poy Consultants in Parkside, South Australia. He also has served as Senior Associate at the Planning Research Corporation and Senior and Principal Research Associate at The Urban Institute. He is a past member of the TRB Division A Council and Chairman of the Group 1 Council on Transportation Systems Planning and Administration.

George T. Lathrop is Deputy Director of Transportation for the City of Charlotte, North Carolina. He earned a B.C.E. from North Carolina State University, an M.C.P. from Yale University, and a Ph.D. in planning from the University of North Carolina. He headed the Research Section of the New York State Department of Transportation from 1962 to 1966, lectured at the University of North Carolina Department of City and Regional Planning from 1966 to 1973, and served as Vice President of John Hamburg and Associates from 1975 to 1982. He is a member of AICP, ITE, and ASCE. He is Chairman of the TRB Committee on Strategic Management and a past Chairman of the Committee on Transportation and Land Development.

Bruce D. McDowell is Director of Government Policy Research at the U.S. Advisory Commission on Intergovernmental Relations. He received a B.A. and Ph.D. from American University and an M.C.P. from the Georgia Institute of Technology. His past positions include Senior Planner for the Maryland National Capital Park and Planning Commission, Senior Analyst for the U.S. Advisory Commission on Intergovernmental Relations, Director of Program Coordination for the Metropolitan Washington Council of Governments, and Director of Governmental Studies for the National Council on Public Works Improvement. He is a member of AICP and the TRB Committee on Intergovernmental Relations and Policy Processes.

Dorn C. McGrath, Jr., is Professor of Urban and Regional Planning and Director of the Institute for Urban Development Research at George Washington University. He received an A.B. from Dartmouth College and an M.C.P. from Harvard University. He has served as Special Assistant to the Director of Construction for the Spanish Bases Program of the U.S.

Division of Metropolitan Area Analysis at the U.S. Department of Housing and Urban Development. From 1968 until 1984, he was Chairman of the Department of Urban and Regional Planning at George Washington University. Professor McGrath is a past President of the American Institute of Planners and a past member of the National Research Council Environmental Studies Board. He is a Trustee and Chairman of the Committee of 100 on the Federal City.

Robert E. Paaswell is Director of the University of Transportation Research Center at the City College of New York. He received a B.A. from Columbia University and a Ph.D. from Rutgers University. He has held positions as Research and Teaching Assistant, Associate Professor, and Professor of Civil Engineering at Columbia University and has served as Chairman of the Department of Environmental Design and Planning at the State University of New York at Buffalo. He is a past Director of the Urban Transportation Center at the University of Illinois at Chicago and past General Manager of the Chicago Area Transit Authority. He is a member of the American Association for the Advancement of Science and the American Society of Engineers and is a former member of the TRB Executive Committee.

Henry L. Peyrebrune is Assistant Commissioner of the Office of Transportation Policy and Public Transportation at the New York Department of Transportation. He has a B.S. from Purdue University and a certificate in Traffic Engineering from the Bureau of Highway Traffic at Yale University. He has held numerous positions of increasing responsibility at the New York Department of Transportation, including head of the Program Analysis Bureau and Acting Director of Transportation Planning.

John P. Poorman is Staff Director of the Capital District Transportation Committee in Albany, New York. He received a B.A. from Haverford College and an M.S. from Northwestern University. He has served as a research assistant at Northwestern University and was Principal Transportation Planner at the Capital District Transportation Committee before assuming his current position.

Harry A. Reed is Assistant Director of the Arizona Department of Transportation. He earned a B.S. from Davis and Elkins College. He has served as Highway Engineer and Assistant Regional Planning Research Engineer at the Federal Highway Administration, Urban Affairs Specialist at Con-

State of Minnesota. Before assuming his current position, he was Vice President of Bennett, Ringrod, Walsfield, Inc.

Roger Schrantz is Administrator of the Division of Planning and Budget for the Wisconsin Department of Transportation. He received a B.A. from the University of Minnesota and has completed graduate work in public policy. He is Chairman of the AASHTO Standing Committee on Planning Subcommittee on Strategic Directions and is a member of several TRB technical committees.

David F. Schulz is the Executive Director of the Northwestern University Infrastructure Technology Institute. He earned a B.S. from Purdue University and a master's degree in management from Northwestern University. He has served as a transportation planner for the Chicago Area Transportation Study; Assistant Director of the Southwestern Wisconsin Regional Planning Commission; Assistant Budget Director and Deputy Public Works Commissioner for the city of Chicago; and Fiscal and Budget Administrator, Director of Parks, Recreation and Culture, and County Executive of Milwaukee County.

Joel F. Stone, Jr., is Director of the Department of Planning and Programming at the Atlanta Regional Commission. He has received a B.S. and an M.S. in civil engineering from the Georgia Institute of Technology. He previously served as Director of Transportation Planning for the Georgia Department of Transportation. He is a member of ITE, AICP, and the American Planning Association.

Alan C. Wulkan is Vice President of Parsons, Brinckerhoff, Quade, and Douglas, Inc. He received a B.S. and an M.S. from the University of Miami. He has served as Director of Intergovernmental Administration for the Metro-Dade Transportation Administration and Executive Director of the Capital Metropolitan Transportation Authority in Austin, Texas. He is a member of the American Public Transit Association, American Society of Public Administration, and the TRB Committee on Citizen Participation in Transportation.

Participants

Adams, Carol T., Mid-America Regional Council, 600 Broadway, 300 Rivergate Center, Kansas City, MO 64105

Althoff, Ronald D., Central Midlands Regional Planning Council, 800 Dutch Square Boulevard, Suite 155 Dutch Plaza, Columbia, SC 29210

Amberger, John M., SEMCOG, 660 Edison Plaza, Detroit, MI 48226

Baker, Jane, Metropolitan Transportation Commission, 101 Eighth Street, Oakland, CA 94607-4700

Banks, Sharon D., Alameda–Contra Costa Transit District, 1600 Franklin Street, Oakland, CA 94612

Barker, J. Barry, METRO R.T.A., 416 Kenmore Boulevard Akron, OH 44301-1099

Bellomo, Salvatore J., Bellomo-McGee, Inc., 8330 Boone Boulevard, Suite 700, Vienna, VA 22182

Bender, Melissa M., National Wildlife Federation, 1400 16th Street, NW, Washington, DC 20036

Boothe, Jeffrey F., Schwabe, Williamson & Wyatt, 2100 Pennsylvania Avenue, NW, Suite 670, Washington, DC 20037

Borucki, Joan, California Department of Transportation, 1120 N Street, Sacramento, CA 95814

Bosley, John J., National Association of Regional Councils, 1700 K Street, NW, Washington, DC 20006

Boyd, James Philip, Atlanta Regional Commission, 3715 Northside Parkway, 200 Northcreek, Suite 300, Atlanta, GA 30327

Brand, Daniel, Charles River Associates, Inc., 200 Clarendon Street, T-43, Boston, MA 02116-5092

Brooks, Jeffrey R., Federal Highway Administration, 211 Main Street, Suite 1100, San Francisco, CA 94105

Bulger, Thomas J., Government Relations, Inc., 1050 17th Street, NW, Suite 510, Washington, DC 20036

Burbank, Cynthia J., Federal Highway Administration, 400 7th Street, SW, Room 3240, HEP-40, Washington, DC 20590

Butler, Nancy M., Federal Transit Administration, 400 7th Street, SW, Washington, DC 20590

Camph, Donald H., Aldaron Inc., 4975 Marshall Drive, Culver City, CA 90230

Canby, Anne P., Canby, Cameron & Company, 300 I Street, NE, Washington, DC 20002

Cannon, Bruce E., Federal Highway Administration, 400 7th Street, SW, Room 3318, Washington, DC 20590

Carroll, Frank, Missouri Highway & Transportation Department, PO Box 270, Jefferson City, MO 65102

Chamberlain, A. Ray, Colorado Department of Transportation, 4201 E. Arkansas, Denver, CO 80222

Claffey, John B., Delaware Valley Regional Planning Commission, The Bourse Building, 21 South 5th Street, Philadelphia, PA 19106

Clawson, David, American Association of State Highway and Transportation Officials, 444 N. Capitol Street, NW, Suite 249, Washington, DC 20001

Clymer, Brian W., Federal Transit Administration, 400 7th Street, SW, Room 9328, Washington, DC 20590

Colby, Chester E., Metro-Dade Transit Agency, 111 N.W. 1 Street, 9th Floor, Miami, FL 33128

Comer, Ralph E., Tennessee Department of Transportation, James K. Polk Office Building, 505 Deaderick Street, Suite 900, Nashville, TN 37243-0334

Cotugno, Andrew C., Metropolitan Service District, 2000 SW First Avenue, Portland, OR 97201-5398

Crunican, Grace, Surface Transportation Policy Project, 1400 16th Street, NW, Suite 300, Washington, DC 20036

Cudahy, Brian, Federal Transit Administration, 400 7th Street, SW, Washington, DC 20590

Cyril, Janet, LaGuardia Community College, 31-10 Thomson Avenue, Long Island, NY 11101

Dahms, Lawrence D., Metropolitan Transportation Commission, 101 8th Street, Oakland, CA 94607

Danchetz, Frank L., Georgia Department of Transportation, 2 Capitol Square, Room 127, Atlanta, GA 30334-1002

Davis, R.B., North Carolina Department of Transportation, PO Box 25201, Raleigh, NC 27611

Diridon, Rod, County of Santa Clara, 70 West Hedding Street, San Jose, CA 95110

Draper, Rob, Federal Highway Administration, 400 7th Street, SW, Washington, DC 20590

Duane, James Q., Ohio-Kentucky Regional Council of Governments, 801-B West Eighth Street, Suite 400, Cincinnati, OH 45203-1807

Edner, Sheldon M., Federal Highway Administration, 400 7th Street, SW, HEP-22, Washington, DC 20590

Eisenberg, Albert C., American Institute of Architects, 1735 New York Avenue, NW, Washington, DC 20006

Emerson, Donald J., Federal Transit Administration, 400 7th Street, SW, Washington, DC 20590

Ewing, David, American Trucking Associations, 2200 Mill Road, Alexandria, VA 22314-4677

Fleischman, Edward R., Federal Transit Administration, 400 7th Street, SW, Washington, DC 20590

Fogel, Robert, National Association of Counties, 440 First Street, NW, Washington, DC 20001

Foster, Jack H., Texas Department of Transportation, PO Box 5051, Austin, TX 78763

Fox, J. Charles, Human Environment Center, 1001 Connecticut Ave, NW, Suite 827, Washington, DC 20036

Gilliam, Fred M., Memphis Area Transit Authority, 1370 Levee Road, Memphis, TN 38108

Gilstrap, Jack R., American Public Transit Association, 1201 New York Avenue, NW, Suite 400, Washington, DC 20005

Graf, Nicholas L., Federal Highway Administration, 310 New Bern Avenue, Room 410, Raleigh, NC 27601

Griffin, Myrna, Operation Care, Welfare to Work Program, 7 Kennedy Square, Suite 1000, Detroit, MI 48226

Hackworth, Ted, Denver Regional Council of Governments, 2480 W. 26th Avenue, Suite 200B, Denver, CO 80211

Harrelson, Thomas J., North Carolina Department of Transportation, PO Box 25201, 15 Wilmington Street, Raleigh, NC 27611

Hartgen, David, University of North Carolina at Charlotte, Department of Geography, Charlotte, NC 28223

Hartman, Richard, National Association of Regional Councils, 1700 K Street, NW, Suite 1306, Washington, DC 20006

Hathaway, Janet S., Natural Resources Defense Council, 1350 New York Avenue, NW, Suite 300, Washington, DC 20005

Heanue, Kevin E., Federal Highway Administration, 400 7th Street, SW, Environment and Planning Office, Washington, DC 20590

Hiemstra, Hal D., Rails to Trails Conservancy, 1400 16th Street, NW

Hoover, Julie, Parsons Brinckerhoff, 250 W. 34th Street, New York, NY 10119

Howitt, Arnold M., Harvard University, 79 JFK Street, Cambridge, MA 02138

Hynes-Cherin, Brigid, San Francisco County Transportation Authority, 255 City Hall, San Francisco, CA 94102

Jeff, Gloria J., Michigan Department of Transportation, Bureau of Transportation Planning, 425 West Ottawa Street, Lansing, MI 48901

Jenkins, Thomas L., Parsons Brinckerhoff, 505 S. Main Street, Suite 900, Orange, CA 92668

Johnson, Christine M., New Jersey Department of Transportation, 1035 Parkway Avenue, CN 600, Trenton, NJ 08625

Jones, Gary L., U.S. General Accounting Office, 370 L'Enfant Promenade, SW, Suite 802, Washington, DC 20024

Jorgenson, Richard A., U.S. General Accounting Office, 370 L'Enfant Promenade, SW, Suite 802, Washington, DC 20024

Juhasz, Barna, Federal Highway Administration, 400 7th Street, SW, Washington, DC 20590

Kane, Anthony R., Federal Highway Administration, 400 7th Street, SW, Washington, DC 20590

Keever, David B., SAIC, 1710 Goodridge Drive, Tower I, Fourth Floor, McLean, VA 22102

Kinstlinger, Jack, KCI Technologies, Inc., 1020 Cromwell Bridge Road, Baltimore, MD 21204

Kirby, Ronald F., Metropolitan Washington Council of Governments, 777 North Capitol Street, NE, Suite 300, Washington, DC 20002-4201

Klein, Jonathan H., Ernst and Young, 1200 19th Street, Suite 400, Washington, DC 20036

Kochanowski, Bob, South Western Pennsylvania Regional Planning Commission, 200 First Avenue, Pittsburgh, PA 15222

Kraft, Terry, Florida Department of Transportation, 605 Suwannee Street, Tallahassee, FL 32399-0450

Kunde, James E., Lorain County Community College, 1005 North Abbe Road, Elyria, OH 44035

Kunze, Karen, Metropolitan Transportation Commission, 101 Eighth Street, Oakland, CA 94607-4700

Lafen, Peter M., Association of American Railroads, 8630 Fenton Street, Suite 910, Silver Spring, MD 20910

Lambert, Louis H., Michigan Department of Transportation, PO Box 30050, Lansing, MI 48909

Larson, Leon N., Federal Highway Administration, 1720 Peachtree Road, NW, Suite 200, Atlanta, GA 30367

Larson, Thomas D., Federal Highway Administration, 400 7th Street, SW, Room 4218, Washington, DC 20590

Lathrop, George T., Charlotte Department of Transportation, 600 East Fourth Street, Charlotte, NC 28202-2858

Lauver, Jean S., United States Senate, SD 410 Dirksen Senate Office Building, Washington, DC 20510

Lawson, Linda L., U.S. Department of Transportation, Office of the Secretary, 400 7th Street, SW, Washington, DC 20590

Lloyd, Kenneth H., Regional Air Quality Council, 2480 W. 26th Avenue, Suite 330-B, Denver, CO 80211

Lockwood, Richard C., Virginia Department of Transportation, 1401 E. Broad Street, Richmond, VA 23219

Lockwood, Stephen C., Federal Highway Administration, 400 7th Street, SW, Washington, DC 20590

MacGillivray, C. I., Iowa Department of Transportation, 800 Lincoln Way, Ames, IA 50010

Mack, Jr., Milton, Southeast Michigan Council of Governments, 660 Edison Plaza, Detroit, MI 48226

Marcou, George T., American Planning Association, 1776 Massachusetts Avenue, NW, Washington, DC 20036

Markowitz, Joel, Metropolitan Transportation Commission, 101 Eighth Street, Oakland, CA 94607-4700

Marner, Abbe, Federal Transit Administration, 400 7th Street, SW, Room 9301, TGM-22, Washington, DC 20590

McCready, Ronald D., Puget Sound Regional Council, 216 First Avenue South, Suite 400, Seattle, WA 98104

McDowell, Bruce D., U.S. Advisory Commission on Intergovernmental Relations, 800 K Street, NW, Suite 450, Washington, DC 20575

McGrath, Jr., Dorn C., George Washington University, 2131 G Street, NW, Room 200, Washington, DC 20052

McKlveen, F. Patrick, United Parcel Service, South Central Region, 2525 Perimeter Place Drive, Nashville, TN 37214

McManus, Robert H., Federal Transit Administration, 400 7th Street, SW, Washington, DC 20590

McMillian, Therese, Metropolitan Transportation Commission, 101 Eighth Street, Oakland, CA 94607-4700

Meyer, Michael D., Georgia Institute of Technology, Department of Civil

Mickelson, Ray, Idaho Department of Transportation, 3311 West State Street, Boise, ID 83703

Miller, Debra L., Kansas Department of Transportation, Docking State Office Building, 8th Floor, Topeka, KS 66612

Moe, Roderick D., Sr., Texas Air Control Board, 12124 Park 35 Circle, Austin, TX 78753

Mortel, Susan, Michigan Department of Transportation, State Transportation Building, 425 West Ottawa Street, Lansing, MI 48909

Oakley, Janet P., National Association of Regional Councils, 1700 K Street, NW, Suite 1306, Washington, DC 20006

Owens, Robert G., Federal Transit Administration, 400 7th Street, SW, Room 9300, Washington, DC 20590

Paaswell, Robert E., University Transportation Research Center, The City College of New York, Room Y220, 138th Street and Convent, New York, NY 10031

Paulson, Todd, MTC, 631 4th Street, Minneapolis, MN 55431

Pederson, M. Susan, SAIC, 1710 Goodridge Drive, Mailstop 1-6-2, McLean, VA 22102

Peyrebrune, Henry L., New York State Department of Transportation, 5 Gov. Harriman State Camp, Albany, NY 12232

Poole, Marion R., North Carolina Department of Transportation, PO Box 25201, Raleigh, NC 27611

Poorman, John P., Capital District Transportation Committee, 5 Computer Drive West, Albany, NY 12302

Posthuma, Ron J., Municipality of Metropolitan Seattle, 821 Second Avenue, MS-93, Seattle, WA 98104

Provost, Thomas, United Parcel Service, 5335 Triangle Parkway, Suite 500, Norcross, GA 30092

Reichard, Sharon L., Central Ohio Transit Authority, 1600 McKinley Avenue, Columbus, OH 43222

Roberts, William, Environmental Defense Fund, 1875 Connecticut Avenue, NW, Suite 1016, Washington, DC 20009

Royer, Charles, Harvard University, JFK School of Government, 79 JFK Street, Cambridge, MA 02138

Schoener, George E., Federal Highway Administration, 400 7th Street, SW, Washington, DC 20590

Schrantz, Roger L., Wisconsin Department of Transportation, 4802 Sheboygan Avenue, PO Box 7913, Madison, WI 53707-7913

Schroeer, William L., U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460

Carnegie Mellon University Libraries
3 8482 00646 4073

Spaulding, Wayne G., Delaware Transportation Authority, PO Box 773, Dover, DE 19903

Stanley, Robert G., American Public Transit Association, 1201 New York Avenue, NW, 4th Floor, Washington, DC 20005

Sterman, Les, East-West Gateway Coordinating Council, 911 Washington Avenue, St. Louis, MO 63101

Stone, Jr., Joel F., Atlanta Regional Commission, 3715 Northside Parkway, 200 Northcreek, Suite 300, Atlanta, GA 30327

Thornton, Robert, New Detroit, Inc., 7 Kennedy Square, Suite 1000, Detroit, MI 48203

Timmerman, Sonny, University of North Carolina at Charlotte, Department of Geography, Charlotte, NC 28223

Venech, Lou P., Port Authority of New York & New Jersey, One World Trade Center, New York, NY 10040

Verchinski, Paul L., Federal Transit Administration, 400 7th Street, SW, TGM-21, Washington, DC 20590

Vick, H. F., North Carolina Department of Transportation, PO Box 25201, Raleigh, NC 27611

Wade, Montie, Texas Transportation Institute, 1600 E. Lamar Boulevard, Suite 120, Arlington, TX 76012

Walker, Hiram J., Federal Transit Administration, 400 7th Street, SW, Washington, DC 20590

Walsh, Joanne M., Texas Department of Transportation, 125 East 11th Street, Austin, TX 78701

Weeks, Thomas R., Federal Highway Administration, 400 7th Street, SW, HEP-12, Washington, DC 20590

Williams, Darrell K., Transportation Advocacy Institute, 1730 Rhode Island Avenue, NW, Washington, DC 20036

Wulkan, Alan C., Parsons Brinckerhoff, 1501 W. Fountainhead Parkway, Suite 400, Tempe, AZ 85282

Zimmerman, Samuel L., Federal Highway Administration, U.S. Department of Transportation, 400 7th Street, SW, Washington, DC 20590

JUL 0 7 1993

Engineering. The Board's purpose is to stimulate research concerning the natu
and performance of transportation systems, to disseminate the information pr
duced by the research, and to encourage the application of appropriate researc
findings. The Board's program is carried out by more than 300 committees, tas
forces, and panels composed of more than 3,700 administrators, engineers, soci
scientists, attorneys, educators, and others concerned with transportation; the
serve without compensation. The program is supported by state transportatio
and highway departments, the modal administrations of the U.S. Department
Transportation, and other organizations and individuals interested in the develo
ment of transportation.

The Natio
society of di
dedicated to
general welf
1863, the Ac
on scientific
Academy o

The Nati
charter of th
ing enginee
members, s
advising th
sponsors en
cation and
Robert M.

The Insti
Sciences to
the examin
Institute act
its congress
own initiat
Kenneth I.

The Nati
Sciences in
the Acaden
ment. Funct
the Counci
Academy c
services to

625.7 N27sa no.237 (1993)
c.1
National Research Council
(U.S.).
Special report -
Transportation Research Boa

University Libraries
Carnegie-Mellon University
Pittsburgh, Pennsylvania 15213

DEMCO

nities. The Council is administered jointly by both the Academies and the Institut
of Medicine. Dr. Frank Press and Dr. Robert M. White are chairman and vic
chairman, respectively, of the National Research Council.

0418

N REQUESTED

WASHI
PERM